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TELEPHONE and Management ENGINEER

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Vol 9 #11

NOVEMBER
1955

THE NATIONAL TELEPHONE MAGAZINE

Featuring in This Issue—

★ SCHOOL DAYS, by *Earle Blomeyer*
★ THE INDEPENDENTS & NATIONWIDE TOLL DIALING, by *L. A. Hodson*
★ A GUIDE FOR TRAINING TRAFFIC EMPLOYES, by *Ruth E. Richards*
★ PRIVATE LINE TELETYPEWRITER SWITCHING SYSTEMS, by *G. A. Locke and E. R. Robinson*
★ EDITORIAL—"ENGAGED IN A COMMON ENDEAVOR," page 51

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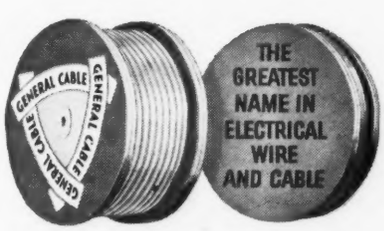

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TELEPHONE and Management ENGINEER

A Telephone Engineer Publication

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The National Telephone Magazine

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Officers and Board Arkansas Telephone Association. L. to R., Standing: — J. D. GARRETT, Jr., secretary-treasurer, Lewisville; S. HOLLINGSWORTH, director, Stuttgart; H. R. WILBOURN, Jr., first vice-president, Conway; J. W. CARTER, president, Smackover; R. L. BANKSON, director, Little Rock; CARL MOORE, director, Harrison; JOHN SHAFFER, director, Gentry. L. to R. seated: — LOIS KEHOE, executive secretary, Little Rock; W. L. BRYANT, director, Leachville; S. W. LANE, director, Russellville; VIRGINIA HIRSCH, second vice president, Mountain Home.

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Outdoor booths designed in Reynolds Aluminum are surprisingly low in cost, far more economical to maintain. In addition to the rustproof advantages of aluminum, they offer maximum portability—are easy to relocate. What's more, parts are lighter, hard to damage, easier to handle. Parts and glass are easily replaced, too—saving you time and money. Add up the savings, add up the longer booth life, add up the extra revenue these booths bring in. See for yourself why outdoor booths designed in Reynolds Aluminum belong in your operation—*now*. Supplied completely assembled or in sub-assemblies. Write today for full information and the name of your nearest distributor.

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Georgia Telephone Association, De Soto Hotel, Savannah, November 17 and 18.

Florida Telephone Association, Hotel Daytona Plaza, Daytona Beach, November 21 and 22.

Louisiana Telephone Association, Jung Hotel, New Orleans, February 8 and 9, 1956.

Minnesota Telephone Association, St. Paul Hotel, St. Paul, February 13, 14 and 15, 1956.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 6, 1956.

Texas Telephone Association, Baker Hotel, Dallas, March 12 and 13, 1956.

Ohio Independent Telephone Association, Deshler-Hilton Hotel, Columbus, March 27 and 28, 1956.

Nebraska Telephone Association, Omaha, (Hotel to be selected), April 3 and 4, 1956.

Iowa Independent Telephone Association, Hotel Fort Des Moines, April 10 and 11, 1956.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 9 and 10, 1956.

Illinois Telephone Association, Pere Marquette Hotel, Peoria, May 16 and 17, 1956.

Missouri Telephone Association, Hotel Muehlebach, Kansas City, Mo., June 4 and 5, 1956.

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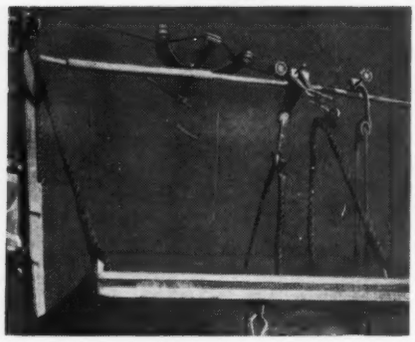

- LGI SLACK PULLER (slip handle)
- LG12 SLACK PULLER (Ratchet Handle)
- PC2 PLATFORM CLAMPS
- HB3 HANDLINE BLOCK
- LC5 LASHING WIRE CLAMP
- CK6 CHIPPING KNIFE CASE
- DPV15 DROP PROOF VALVE CAPS
- SC&B17 SOAP CONTAINER
- SPH18 SINGLE EYE PLATFORM HOOK
- DPH19 DOUBLE EYE PLATFORM HOOK
- RTS20 PRESSURE TESTING SOAP
- CSP21 SPLICER'S PLATFORM
- STB22 SPLICERS TOOL BOX
- CL29 POWER STRAP
- TA32 TENT ADAPTER
- ST34 SPLICER'S TONE

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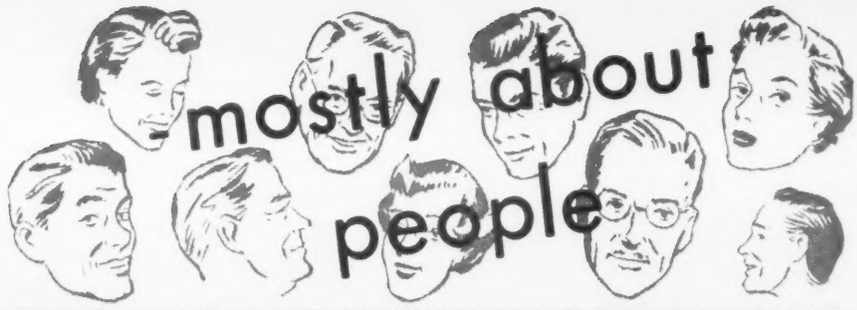


ACROSS THE EDITOR'S DESK

"Cap" White

DEVERLLE J. WHITE is a man most of the people in the telephone industry know well by his nickname *"Cap" White*. This month we honor him as dean of the anchor men serving our industry with a service record of 58 years, most of it with the Everstick Anchor Co., Fairfield, Iowa. We hoped our picture of "Cap" which we snapped during the recent USITA convention would be available for this issue but, like *Roy Siemund's* picture, it did not turn out. We do, however, take this opportunity of honoring him for his many years of service to telephony and to wish him many, many more!

■ ■ ■

Two Winners

CONGRATULATIONS to two of our leading Independent telephone companies for placing first and second in FINANCIAL WORLD'S annual competition for excellence of their 1954 reports.

In the Communications category the *Rochester (N.Y.) Telephone Corp.* won the Bronze Oscar of Industry and the runner-up was the *Peninsular Telephone Co., Tampa, Fla.*, winner of Merit Awards the past four years. *Donald H. Campbell* for Rochester and *J. Hartwell Jones*, Tampa, accepted the Awards for their companies at the dinner for winners at the Hotel Statler, New York, on October 24.

■ ■ ■

Alexandria Cutover

THE ALEXANDRIA (Minn.) Telephone Co. sent us an invitation to its dial conversion which was held at midnight, Saturday, October 29. After dealing with trick or treaters and Hallowe'en goblins at this time of the year we hope none of their cousins, the gremlins, interfered with the cutover for Alexandria. The invitation was well done and is going into our personal memory book. It is too bad that *Mel Wright*, who passed on recently, was not able to be present at this memorable event. It was nice to have seen and greeted *Mrs. Wright* during the recent convention.

■ ■ ■

P. M. Ferguson

IT WAS NICE to see our old friend *Peter M. Ferguson* and *Mrs. Ferguson* at the October national convention in Chicago. *Pete* spent a long sojourn in the hospital this summer before he was crowned the winner. We missed his side-kick *Tom Macoubrey* of St. Paul as these two have been attending the national for more years than we want to remember.

■ ■ ■

"Industry Operating Manuals"

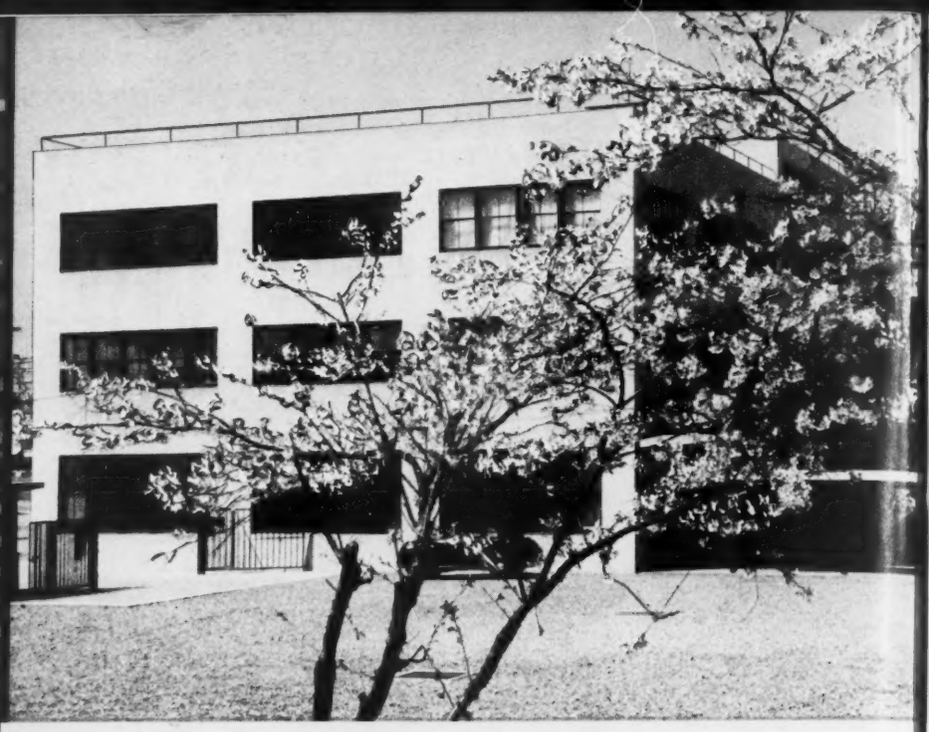
MANY OF YOU managers will have a new problem on your hands in the near future. Do not blame me if you are not warned. We expect a number of employes will be putting the bee on you, Mr. Manager, for a subscription to TELEPHONE ENGINEER & MANAGEMENT so each of them may have their own personal copy. The reason: the appearance of our first INDUSTRY OPERATING MANUAL in an early issue.

After this first Operating Manual appears in our columns each succeeding issue of the magazine will carry Operating Manuals on various subjects. Plant, accounting, management and traffic will all be treated in succeeding issues and will be so arranged that pages may be detached for collation. We are very enthused over this new feature and suggest that you Managers make arrangements now to see that your key people get their own copies. See our ad in the December issue for more details.

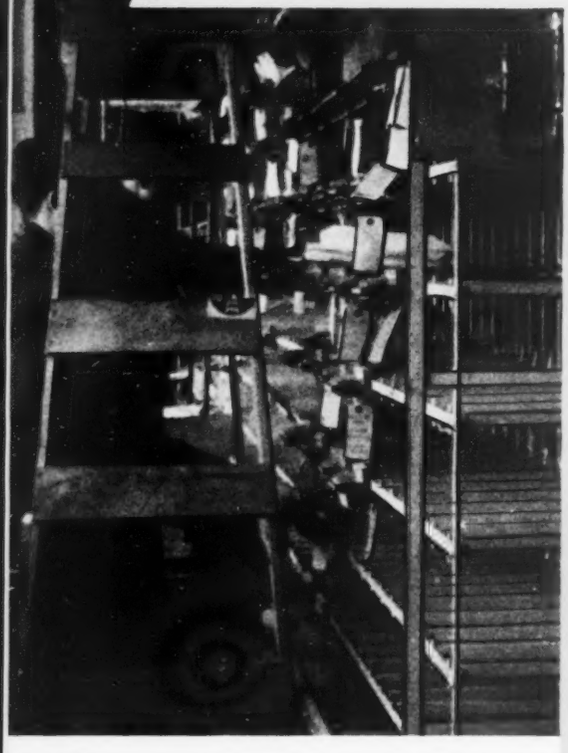
Adding this took the jinx off 4770 telephone lines

* This is a Japanese Character which is made up of the following parts Rain 雨 Rice field 田 Speech 言 Tongue 舌 . . . the whole thing means telephone.

‡ This is the familiar Kellogg Lion . . . "Kellogg" added to "telephone" means the finest in telephone equipment.



A strange Japanese superstition demonstrates how Cros



Japanese telephone technicians installing Kellogg equipment at the Takasaki exchange. Installation was simplified because all Kellogg Crossbar Switches and relay units are factory wired and ready for installation by merely plugging in.

After making a five-year, world-wide study of all types of telephone equipment, the Japanese government chose Kellogg equipment for the largest order it had ever placed abroad . . . an installation of 5300 lines. Here's just one reason why:

Two digits are considered so unlucky in Japan that subscribers will not accept phone numbers which contain them.

They are nine and four . . . pronounced in Japanese "Ku" and "Shi." Ku is also the word for agony and Shi the word for death. No Japanese wants agony and death following his name in the phone book and, as a result, the Japanese government has found it difficult to assign almost 90% of the numbers available.

One of the features of Kellogg Crossbar that you have found helpful was the answer for the Japanese. The numbers of the extra lines in a private branch need not be in sequence! They may be above or below the listed number! So, the Japanese simply hide the 4770 numbers containing the unlucky digits in the extra lines.

This feature saves *you* time and money when your subscribers request extra lines. It is one of a dozen features that have made Kellogg Crossbar so popular.

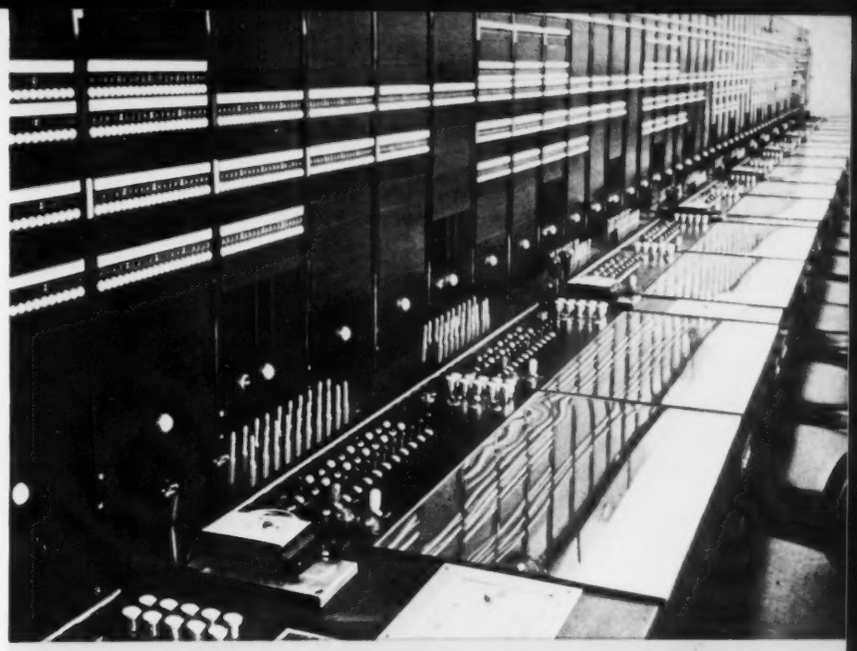
If you are thinking about converting to dial, you owe it to yourself to investigate the advantages of Kellogg Crossbar.

KELLOGG

KELLOGG A DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION
SALES OFFICES: 79 West Monroe Street, Chicago 3, Illinois

The Takasaki Office. Cherry blossoms on the grounds of an ancient castle frame the building which contains ultra-modern Kellogg Crossbar equipment. Ideal for the growing Japanese telephone system, this equipment puts no limit on expansion.



The Japanese are second only to the U. S. in number of toll calls placed. This Kellogg 58 position toll board enables the Takasaki office to match the highest U. S. standards in the handling of calls. It includes a number of automatic features introduced for the first time abroad and is served by a pneumatic tube system manufactured by Mix and Genest, another IT&T division.

Crossbar means savings for you

Drawer mounted Crossbar switches are individually covered at Takasaki. They can be pulled out like file cabinet drawers for easy inspection without being taken out of service. With these switches maintenance costs are low . . . routine maintenance is practically eliminated.

Kuragano and Annaka (satellites of Takasaki) are the first unattended dial offices in Japan. The Kuragano office is located on the spot where an ancient castle tower once stood. In olden times messages were conveyed by the inefficient method of raising and lowering large balls from a pole at the top of this tower. Today, each of the efficient Crossbar switches installed here can handle as many as 20 simultaneous calls.

A RECORD-BREAKING ORDER . . .

everyone is 吅*

Two Japanese officials meet with the Kellogg people in Chicago. After completion of a five-year study, the Japanese government chose Kellogg for the largest order of telephone equipment it had ever placed abroad, 5300 lines.

(left to right) H. Van Zandt, W. C. Howard, A. T. Sigo, Y. Orikasa, A. N. Saunders, Y. Mizuo, and L. B. Haigh. (Incidently, Mr. Van Zandt, who spent many years in Japan, is probably the only U. S. telephone engineer who speaks fluent Japanese.)

---

*one — mouth ▭ rice field ⊞

One mouth for a whole rice field which means "happy."
Kellogg Crossbar benefits make you happy too!

KELLOGG

KELLOGG A DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
A DIVISION OF INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION
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NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*
ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

Dear Sir: November 15, 1955

A BELL SYSTEM OFFICIAL & the Pres. of Communications Workers of America last month presented their views on effects automation has had on telephone industry in testimony before subcommittee of Joint Congressional Committee on the Economic Report.

Clifton W. Phalen, pres. of Michigan Bell Tel. Co., in appearance before committee on Oct. 27, said that automation which has been in progress for many years can be expected to continue but that he sees nothing in present picture to change long-term trend of increasing markets & increasing job opportunities in Bell System. Mr. Phalen said that basic reasons for automation were "to improve the quality and usefulness of telephone service, to satisfy the demand for service, and to keep the cost of our product at a reasonable level."

Earlier, CWA's President Joseph A. Beirne predicted a 200,000-job decline in telephone industry employment by 1965 unless a "tremendous business increase" offsets effects of automation. "The only way employment opportunities can be maintained in Bell System in the face of constant mechanization is to have tremendous increases in telephone service," the union official stated. "It is not enough to have to have large increases, tremendous increases are required."

* * *

THE CONCLUSION THAT IT IS INADVISABLE to attempt to reach decision on new interstate-intrastate telephone separations method at this time, but that its Special Telephone Committee should submit to 1956 convention "plan or plans" of separations if so-called modified Phoenix plan is not adopted in meantime, was recommended to National Association of Railroad & Utilities Commissioners & approved by membership at its annual convention last month in Asheville, N. C.

NARUC members & their guests were given several reports taking up regulatory aspects of new accelerated depreciation provisions of last year's modification by Congress of Internal Revenue Code, in probably most discussed development at convention from telephone regulatory point of view.

State commissioners heard FCC chairman, George C. McConnaughey, in feature address, emphasize that "I am more and more convinced that the primary objectives of regulation should be to integrate regulated industries into the general economy so that their services, their rates, their earnings, and all of their activities will be tuned to the times."

New York Public Service Commission Chairman Benjamin F. Feinberg was unanimously elected Pres. of the organization for coming year. John C. Hammer, chairman of Tennessee Comission, & Edward R. Thornton, of New Hampshire Commission were elected vice presidents.

* * *

PERSONS WHO HAVE SERVED Business & Defense Services Administration of Department of Commerce & its predecessor mobilization agencies with-

D IN U.S.A.

out compensation while on loan from industry have been invited to attend one-day conference in Washington on Tuesday, Nov. 29, to get "refresher" on government's preparedness program.

* * *

BUSINESS & DEFENSE SERVICES ADMINISTRATION of Department of Commerce has been given representation on Telecommunications Planning Committee, the inter-departmental agency which is designed to assist & advise Director of Defense Mobilization regarding policies & plans which are of vital importance in nation's use of its telecommunications facilities & resources in both war & peace.

* * *

WITH NATION'S ECONOMY in long-term period of dynamic growth & continued rise of volume of industrial activity at around 4% year assured, continuing "heavy demand for additional telephone service" & need for Bell System construction activity at present all-time high levels for next several years was foreseen last month by L. C. May, chief statistician of American Tel. & Tel. Co. in address to Washington Society of Security Analysts.

* * *

PROGRAM FOR DEVELOPMENT OF NATION'S AIRWAYS that would call for expenditures of upwards of $500,000,000 during next 5 fiscal years, much of it for communications & electronics equipment needed for air traffic control, is being drafted by Civil Aeronautics Administration at direction of Congressional committees which desire more detailed information to support budget requests.

* * *

THROUGH FISCAL YEAR ENDED JUNE 30, government spent total of $895,960,000 on procurement of electronics & communications equipment for military functions & mutual defense assistance program, it was reported last month by Defense Department. At beginning of fiscal year there was available $2,724,478,000 for spending.

* * *

OPERATING REVENUES AND NET INCOME of General Tel. Corp. & its subsidiaries for first 9 months of 1955 & for year ended Sept. 30 reached record levels, company reported last month. Operating revenues for 9-month period totaled $116,351,495, compared with $105,038,768 for same period of 1954. Net income was $15,771, 845 against $11,397,084. For year, operating revenues totaled $153,354,186, compared to $138,800,605 for previous 12-month period. Net income over year ended Sept. 30 amounted to $20,766,866, against $15,197,219 for earlier like period. It was first time that net income applicable to common stock exceeded $20,000,000. At end of Sept., General System had 1,908,000 telephones in service.

* * *

MERGER OF THE THEODORE GARY & CO. with its manufacturing properties & the second largest group of Independent telephone operating companies into General Tel. Corp. & General Telephone System became effective Monday, Oct. 31. Transfer books on common participating & common stock of Theodore Gary & Co. were closed at end of business Friday, Oct. 28.

Ray Smith

Ray W. Smith, Editor

Now here's one from Stromberg-Carlson...

Better—as you'd expect!

HANDS FREE TELEPHONE

Telephones (or other devices) which provide two-way conversation even when both your hands are busy, aren't new. But there's a mighty good reason why Stromberg-Carlson has waited until now to market a *Hands-Free* 'phone.

With the purpose of making a completely improved *Hands-Free*, we've been studying and eliminating "bugs" which we found in existing instruments. We now offer a loudspeaking-or-conventional telephone we know is superior in every way. Busy housewives will bless it . . . modern-minded executives will see its efficiency on sight.

A few of our exclusive advantages are shown here. Ask your nearest sales office to tell you all about this remarkable new product. Finished in modern office gray, it's designed, like all Stromberg-Carlson equipment for subscriber use, to make *extra revenue* for you!

STROMBERG-CARLSON COMPANY

A DIVISION OF GENERAL DYNAMICS CORPORATION

Rochester 3, N.Y.

1. To put this two-piece instrument into operation requires only connection of the line cord, plug-in to a 110-volt AC outlet and attachment of the mike cord. 15 minutes: Some designs take 3 to 4 hours to install.

2. This microphone is separate, not built into a heavy, hard-to-move instrument. Can be placed anywhere convenient, has 12 ft. cord, and it is non-directional; works from side, rear, front.

3. The Stromberg-Carlson *Hands-Free* telephone has AVC*. If a subscriber uses the mike too close to his mouth, the instrument automatically compensates to prevent the usual unpleasant "boom." And there's almost complete absence of coupling.

4. The *Hands-Free* telephone can be used as a conventional instrument, simply by lifting the handset. And it is easily switched back and forth between conventional and loudspeaking operation.

*** *Automatic Volume Control.***

FRED FLORANCE TELLS WHAT HE EXPECTS FROM Graybar

FRED S. FLORANCE, General Manager of Highland Telephone Company, Monroe, N. Y.

Three generations of telephone experience. Fred H. Florance (center), President of Highland Telephone, joined the company in 1902. Fred S. Florance (right), a past President of the New York State Telephone Association, joined the company in 1930 as assistant to the general manager. He is now its general manager. Robert L. Florance (left), a veteran of Korea, continues the family tradition as an apprentice installer-repairman. Company headquarters are in Monroe, N. Y. This independent company now serves over 6000 subscribers with modern telephone facilities in 20 communities of Orange County.

Concerning Graybar, Fred S. Florance says:

"First of all, we look to Graybar to get us what we want—when we want it. We like the convenience and economy of placing a multiproduct order through *one source like Graybar*. That means one company is responsible to us for expediting the order. We also save extra expense through single billing.

"Secondly, *Graybar carries only quality products.* When we order through Graybar we know we'll get products backed by the reputation of a nationally-known outfit. 'Out of service' situations involving product failure are reduced almost to zero because we refuse to gamble on unknown or inferior brands.

"Finally, *Graybar personnel* gives us specialized service. Harry Zach, our Graybar Representative, follows through to be sure that I get the items I need. We know that there is a team backing Harry at the Graybar warehouse which has our interests at heart. That's why we listen to Graybar recommendations on both new and established products—Graybar men are up-to-date where the telephone business is concerned.

"Adding it all up—this *specialized Graybar cooperation* and service means special economies to independents like Highland. And where we can save money to provide better service for our subscribers—we do it! That's what we expect and that's what we get from Graybar."

You too can benefit from Graybar's services! Many independent telephone companies rely on Graybar's warehouse system to carry their inventory. Pole line supplies for maintenance and new construction . . . central office equipment . . . subscriber carrier and toll circuit carrier . . . linemen's tools and safety equipment — all are conveniently available from Graybar warehouses located near you. Call us for any telephone need. Like you, we are proud of our independent status. Graybar is owned solely by its operating and retired employees.

547-2211

Fred Florance's philosophy is to buy only from the most dependable sources. Here he discusses an order with Graybar Representative Harry Zach. The Highland Telephone Company, which employs 90 people, at times considers Harry Zach as practically one of their staff.

In the field Highland Telephone Company Lineman Ed Kania prepares to make a crossover with a GMPCO cable lasher. Here the company's older wire circuits are being replaced with cable. The Highland Telephone Company relies upon Graybar for many types of outside construction material and supplies.

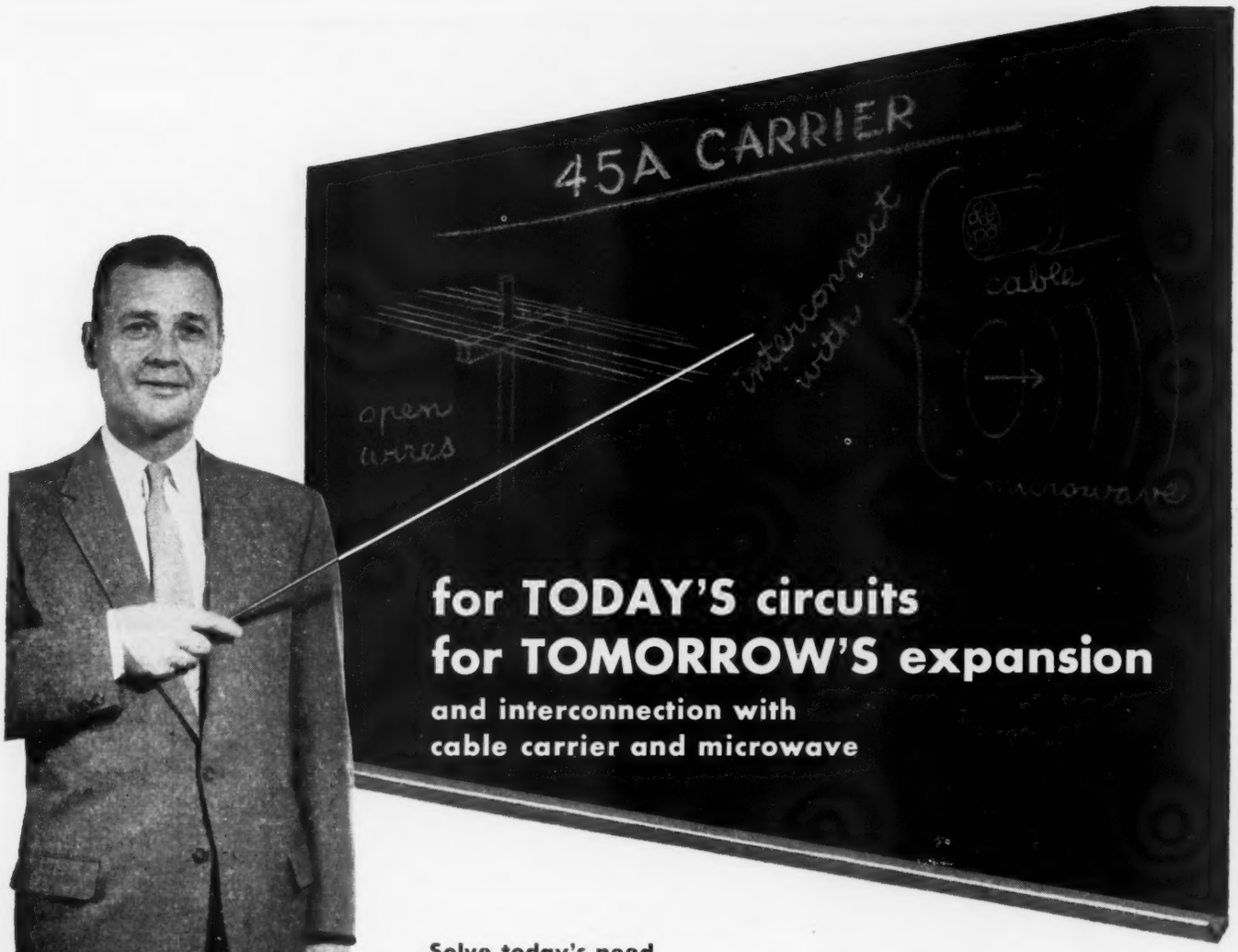
Groundman Harry Kasch and Foreman Harry Bell check progress on the installation of a new cable. Highland management has long recognized the efficiency of using quality equipment made by leading manufacturers. Highland Telephone Company linemen are provided with the finest in both tools and safety equipment—most of it available from Graybar.

Call Graybar first for...

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N.Y.

GRAYBAR QUALITY *Everything Electrical*

IN OVER 120 PRINCIPAL CITIES



for TODAY'S circuits for TOMORROW'S expansion

and interconnection with cable carrier and microwave

Solve today's need
for more circuits with Lenkurt Type 45A Carrier!
It will multiply the capacity of your present physical lines—quickly, easily, economically! Takes up a minimum of space . . . requires little power . . . "proves in" at less than 15 miles in competition with open wire, crossarms and poles—yet gives you toll-quality transmission for your longest distances.

You can add a partially equipped 45A Carrier system above existing low-frequency systems (such as Lenkurt 33A) . . . coordinate it with other long-haul systems . . . or *start with 45A as a foundation for future expansion.* **Simplify tomorrow's planning** with a beginning in 45A Carrier. Then, when future expansion is needed—in open wire carrier, cable carrier, or microwave—your 45-Type Carrier will *interconnect at carrier frequencies.* Thus, your entire system will be integrated, fully coordinated, for decades to come—with no necessity for hodge-podge connecting elements or expensive patchwork conversions.

Lenkurt 45-Type Carrier Systems for open wire, cable, and radio are now available. All give you miniaturized components, plug-in sub-assemblies, and simplified maintenance. Write or call for facts, today! Address Automatic Electric Sales Corporation (HAymarket 1-4300), 1033 West Van Buren Street, Chicago 7, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

GENERAL TELEPHONE SYSTEM

Manufactured for

AUTOMATIC ELECTRIC

ORIGINATORS OF THE AUTOMATIC TELEPHONE

AUTOMATIC ELECTRIC • LEADERS IN CARRIER COMMUNICATIONS • **LENKURT**

For fast telephone battery service . . .

save this map!

1. Atlanta, Ga., Northside Station—Box 153, Cherokee 3790
2. Baltimore, Md., 2406 N. Charles Street, Hopkins 7-1020
3. Baton Rouge, La., 4445 Sweetbriar, 3-6215
4. Birmingham, Ala., P. O. Box 5987—Homewood Station, 2-0064
5. Boston, Mass., 49 Mt. Auburn St., Watertown, Mass. Watertown 4-5200
6. Buffalo, N. Y., 443 Delaware Ave., Madison 5256
7. Charlotte, N.C., P. O. Box 9201, Edison 4-9739
8. Chicago, Ill., 3454 W. Lake St., Sacramento 2-6750
9. Cleveland, Ohio, 14812-20 Detroit Ave., Blvd. 2-3130
10. Dallas, Texas, 705 Praetorian Bldg., Prospect 2271
11. Denver, Colo., 1732 Blake St., Cherry 4-1102
12. Detroit, Mich., 15336 W. Warren Ave., Dearborn, Mich. Tiffany 6-8712
13. Indianapolis, Ind., 230 E. Ohio Street, Melrose 2-5962
14. Jackson, Miss., 429 S. West St.—Box 1085, 5-8305
15. Jacksonville, Fla., 3540 Remington St.—Box 6254 Evergreen 8-6490
16. Kansas City, Mo., 410 E. 27th Terrace, Victor 1742
17. Little Rock, Ark., 400 Shall St.—Rm. 114, Fr. 4-8314
18. Los Angeles, Calif., 1014 Venice Blvd., Richmond 9-5698
19. Memphis, Tenn., 2523 Broad Ave., P. O. Box 5131, Birmingham Station, 33-8981
20. Milwaukee, Wisc., 5625 W. Wells St., Greenfield 6-0153
21. New Orleans, La., 820 Julia Street, Tulane 5207
22. New York City, 198 Pavonia Ave., Jersey City, N. J., Journal Sq. 2-4842, 4843
23. Omaha, Nebr., 3213 N. 16th St., Atlantic 5340
24. Philadelphia, Pa., 5th St. at Cheltenham Ave., Majestic 5-4410, 4411
25. Pittsburgh, Pa., 727 Penn Ave., Churchill 1-9051
26. Portland, Ore., 427 N.E. Cook St., Tuxedo 1449
27. Richmond, Va., 4101 Bremner Blvd., Richmond 88-8432
28. Rock Island, Ill., 218 Safety Bldg., R. I. 8-2181
29. San Diego, Calif., 722 Fern Glen, La Jolla, Calif., Glencourt 4-6757
30. San Francisco, Calif., 725 Second Street, Sutter 1-6591
31. Seattle, Wash., 2911 First Ave., South, Main 7488
32. Spokane, Wash., E. 125 Mission St., Fairfax 5379
33. St. Louis, Mo., 559 N. Skinker Blvd., Volunteer 3-6171
34. Syracuse, N. Y., 402 S. Townsend St., 76-2978
35. Tulsa, Okla., 214 East 12th St., 2-3197
36. Washington, D. C., Suite 344, Washington Bldg., National 8-1852

Wherever you may be there is a C & D service representative nearby to serve your needs. If you have any questions concerning industrial batteries or maintenance, one of C&D's trained service representatives listed above will be glad to serve you.

C&D BATTERIES, INC.
of Conshohocken, Pa.

Industrial Batteries since 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

THE BIG 5 IN CABLE SPLICES

The New Splice Maker

by Cook

For cold splicing of lead or plastic sheath distribution cable from 11 to 101 pair (¼" to 1" dia.) sizes. This new unit provides flexibility with five combinations of two components and the Stranterms as illustrated.

EASY TO RIG

Mount the strand clipped half of the Splice Maker to the messenger, measure the sheath for stripping, and position with tape for splicing.

EASY TO PACK

With one half of the Splice Maker in position, the staggering of the wire joints within the prescribed splicing area makes final forming of the bundle regular and easy to pack away in the Splice Maker housing.

EASY TO ASSEMBLE

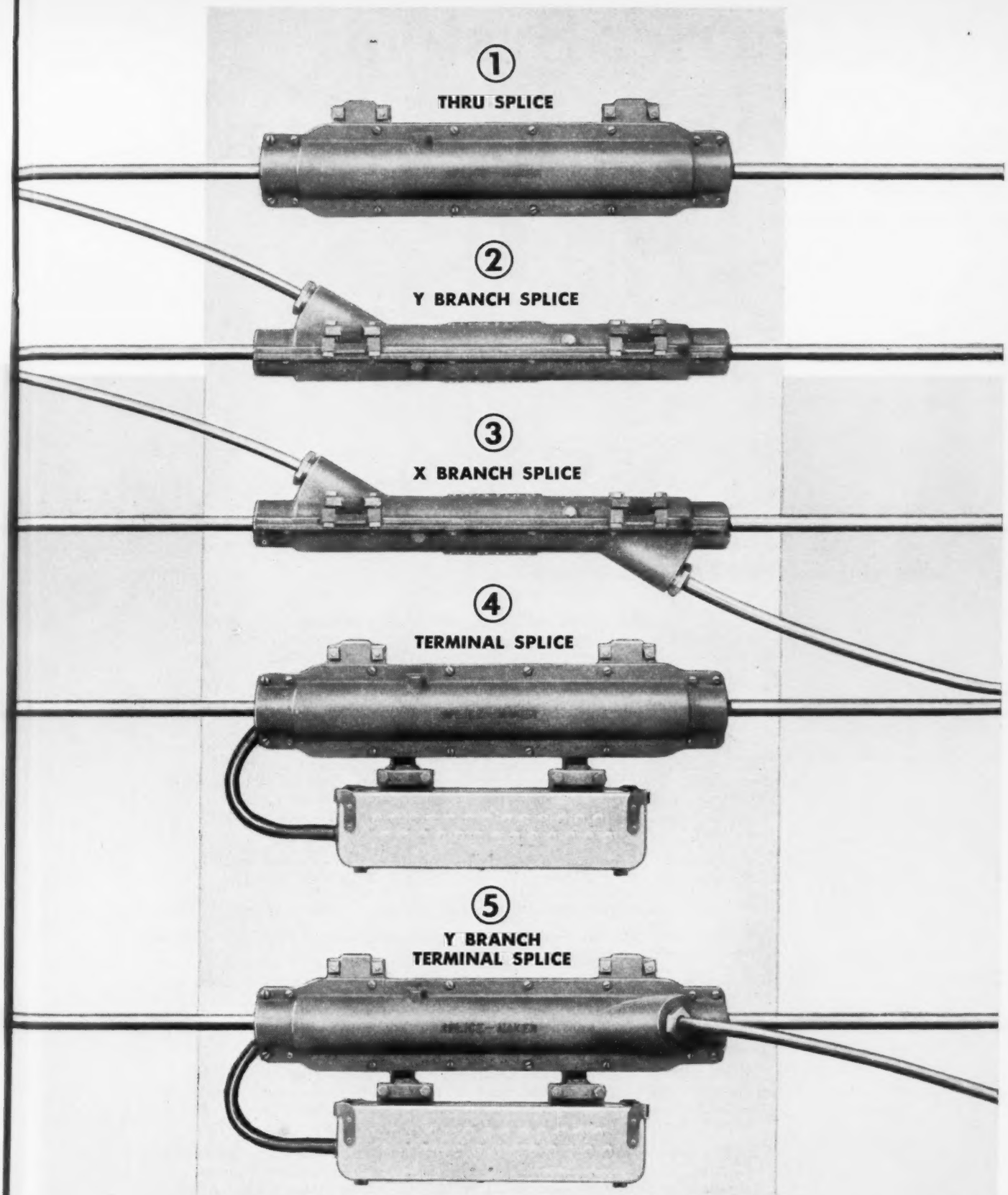
All fasteners, grommets and small parts are retained by the two Splice Maker halves and nothing can fall to the ground. Assembly of the two halves is accomplished with screw driver or socket wrench.

EASY TO SEAL

Sealing is accomplished with split grommets and edge gasket. A fill hole also permits compound potting to insure long term moisture proofing.

COOK ELECTRIC Company
Since 1897

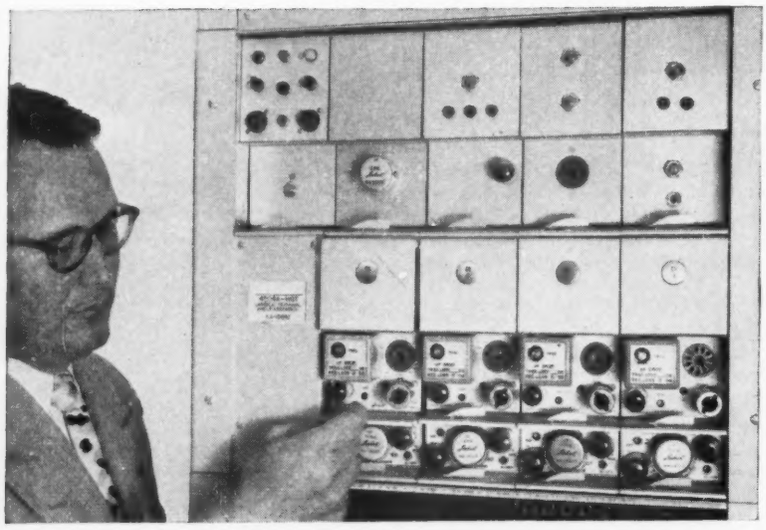
2700 SOUTHPORT AVENUE CHICAGO 14, ILLINOIS



1 THRU SPLICE	CATALOG NO. 81-20
2 Y BRANCH SPLICE	CATALOG NO. 81-21
3 X BRANCH SPLICE	CATALOG NO. 81-22
4 TERMINAL SPLICE	CATALOG NO. 81-23
5 Y BRANCH TERMINAL SPLICE	CATALOG NO. 81-24

PAT. APPLIED FOR

First Carrier System Using Transistors!



... **LENKURT'S** *new type 45CB*
4 channels — only 15½ inches high!

Here's a completely new open-wire carrier system which: (1) provides an *inexpensive* way to expand your circuit groups beyond the capacity of low-frequency carrier, (2) requires only *minimum space.*

All the advantages of Type 45 miniaturized carrier—formerly available only for large circuit groups—are now offered in groups of only four channels, or even less.

Type 45CB gives you the kind of performance you have come to expect of Lenkurt carrier. Each channel has its own separate Compandor, its own built-in signal channel, and its own channel regulator. This system provides toll-quality transmission for short- and medium-haul applications—even when line conditions are less than ideal. Consider, also, these additional features:

- **Compact equipment arrangements**—The four-channel assembly occupies only 15½ inches of vertical space on a 19-inch rack.
- **Plug-in construction** facilitates installation, line-up and maintenance.
- **Constant receiving level,** through combined action of system regulator and individual channel regulators.
- **Minimized line-treatment problems** at repeater points, because of "frequency-frogging" carrier repeaters.
- **Low power consumption**—Transistorized common-equipment units require little power, and reduce problems of heat dissipation.
- **Flexibility of interconnection**—Type 45CB systems can be interconnected at carrier frequencies with other 45-class systems. The frequency allocation is between 40 and 76 kc, which permits operation on lines already equipped with 3ØA or other low-frequency carrier systems.

If you need more circuits, you'll certainly want to consider Type 45CB Carrier. Write today for complete information. *Address* Automatic Electric Sales Corporation, 1033 West Van Buren Street (HAymarket 1-4300), Chicago 7, Illinois. *In Canada:* Automatic Electric Sales (Canada) Ltd., Toronto. *Offices in principal cities.*

Manufactured for

AUTOMATIC ELECTRIC

ORIGINATORS OF THE AUTOMATIC DIAL TELEPHONE

GENERAL SYSTEM

AUTOMATIC ELECTRIC • LEADERS IN CARRIER COMMUNICATIONS • **LENKURT**

In any **MODERN** switchboard installation–

Photo courtesy of Stromberg-Carlson

the choice is **ACCURATE AUTOMATIC TOLL TIME CALCULATING AND RECORDING**

by **CALCULAGRAPH**

Because they quickly save many times their initial cost, CALCULAGRAPH permanent printed records eliminate switchboard detail work, speed service. Accuracy-to-the-second permits collection of all the revenue due on every call. CALCULAGRAPHS are precision instruments featuring high visibility dials, smooth silent lever action. Available in several models, they can be engineered into new equipment by your switchboard builder or easily included in your present set-up. For complete information just call or write.

CALCULAGRAPH COMPANY

HARRISON • NEW JERSEY

THE STANDARD OF ACCURACY SINCE 1892

Conroe Tel. Co. Places $300,000 Bond Issue

CONROE TELEPHONE Co., Conroe, Texas, has placed $300,000 First Mortgage Bonds due 1980 with Berkshire Life Insurance Co., Pittsfield, Mass.

Purpose of the loan is for refunding notes payable incurred in connection with conversion to automatic dial.

This is Berkshire's 39th piece of Independent telephone financing.

Northern Ohio Tel. Co. Plans Microwave Project

COLONEL William C. Henry, president and general manager of Northern Ohio Telephone Co., Bellevue, Ohio, has announced that microwave equipment is to be installed at Norwalk and Willard. 100-foot steel towers are being erected at Norwalk and Willard and telephone messages will be beamed between the two exchanges. For safety reasons the towers are to be erected on 15 foot reinforced concrete footers. They are constructed to withstand a 180 mile per hour gale.

The new equipment will provide 12 channels between Norwalk and Willard, but can be expanded to 72 channels. At present there are 28 wire circuits between the two exchanges.

The microwave equipment is being installed at a cost of $200,000.

$4,000,000 Expansion Program Announced by Carolina T. & T.

A $4,000,000 EXPANSION program in its exchange at Fayetteville has been disclosed by Carolina Telephone & Telegraph Co., Tarboro, N. C.

According to officials of the company, the program will involve a building addition which will more than double the floor space of the company's Fayetteville toll building; the installation of a fourth local dial office for the city; the expansion of existing long distance central office facilities and the expansion of outside plant facilities which will extend new cables, poles and wires to nearly every quarter of the exchange.

A fourth and complete new dial exchange will be installed in the third story of the new building addition. When placed in service, the new office will have a capacity of 7,400 lines and 10,000 terminals. In the first and second story of the new structure, the company will increase present toll facilities by the addition of some 13 switchboard positions plus additional auxiliary positions and related long distance equipment. The existing toll office has 50 switchboard positions and nine auxiliary positions.

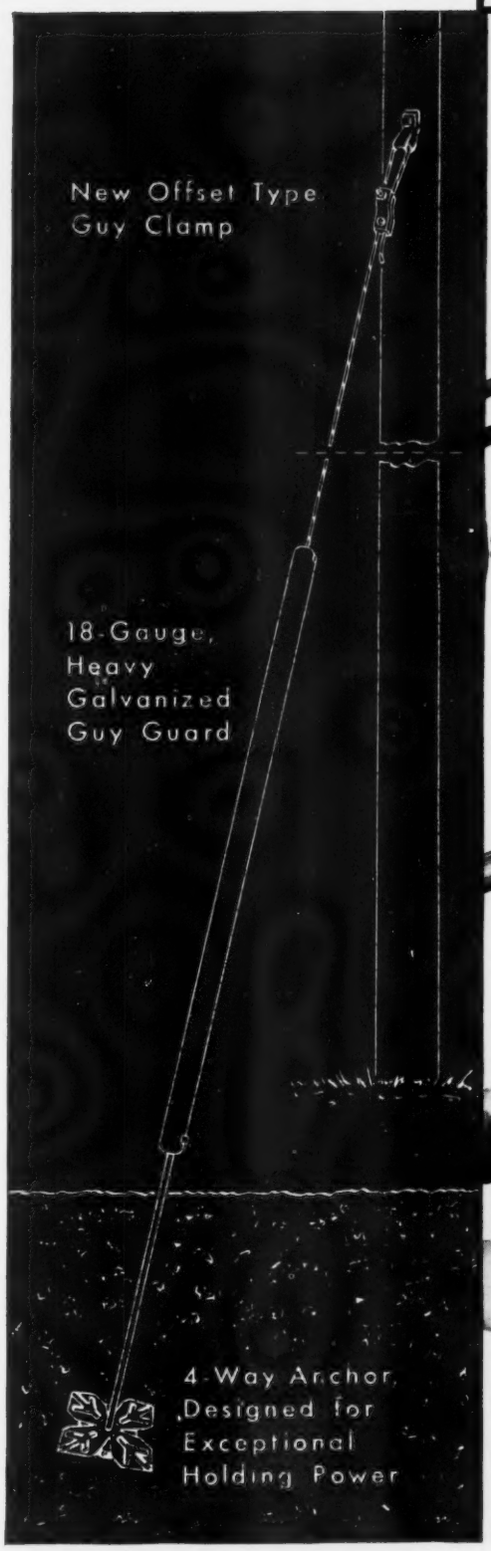
Greatest expenditures of the program will be made to extend and expand cable facilities to provide increased service throughout most sections of the exchange. Included in this phase of the program will be the placing of over 8½ miles of conduit under the streets and alleys of the city through which cable later will be installed. Extensive aerial cable placing projects are scheduled to provide new and increased service facilities for the many new housing subdivisions of the rapidly growing exchange.

The current $4,000,000 expansion program represents a new phase of an overall program of Carolina Telephone & Telegraph Co. to provide adequate facilities for the area.

Following the end of World War II, or at the end of 1945, there were some 6,200 telephones serving the

INDEPENDENTS attending recent district meeting of the Missouri Telephone Association at Springfield, Mo.

LINE CONSTRUCTION MATERIALS
To Meet Your Guying Needs
OFFSET GUY CLAMPS, GUY GUARDS, ANCHORS



L-M's New Offset Guy Clamp

Two sizes: Cat. No. 221522A2 for 5/16" to 1/2" Guy Wire
Cat. No. 221522A1 for 1/4" to 3/8" Guy Wire

Here's a new guy clamp design with superior holding power—in excess of the breaking strength of the strand accommodated.

The offset grooves tend to snub the cable under load, effectively restraining the slip of the cable.

L-M's new offset guy clamp saves on initial cost and installation time.

L-M's Guy Guard *clamps firmly*

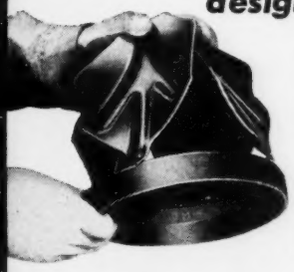
Cat. No. 280024B1 Length 8 Feet; 280024B2 Length 7 Feet

L-M's guy wire protectors have a tight anti-rattle hook at upper end and unique anchor rod clamp at lower end. Position of bolt on side of protector facilitates tightening of lower clamp. No loose parts to fall out.

Body is 18-gauge steel with a heavy hot-dip galvanized coating to assure long-lasting protection. Available in two lengths.

L-M's 4-Way Pressed Steel Expanding Anchors

designed for exceptional strength



Catalog Number	Nominal Holding Power Class—Pounds	Anchor Rod Diameter—Inches	Minimum Mechanical Strengths, Pounds
200026B1	6,000	⅝, ¾	16,000
200026B2	8,000	⅝, ¾	21,000
200026B3	10,000	1	24,000
200026B4	10,000	⅝, ¾	24,000

Two-piece design... The four blades are formed of a single piece of steel and coordinate with the sturdy base plate to develop maximum holding power.

Blades are designed to provide minimum resistance to earth penetration during installation and maximum resistance to pull-out when in expanded position.

These anchors have been thoroughly tested and approved by major utility companies. You can depend on them to hold!

Thousands of Line Construction Specialties

These are just a few of thousands of L-M line construction specialties warehoused nation-wide to serve your needs. Contact your North Electric Manufacturing Company or Kellogg Switchboard & Supply Company representative, or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division). 231A

Sold for L-M to the independent telephone industry by

LINE MATERIAL
Line Construction Materials

KELLOGG Switchboard and Supply Company
AND
THE NORTH ELECTRIC MANUFACTURING COMPANY

Fayetteville area. On August 30 of this year, the company celebrated the installation of its 15,000th telephone in the exchange.

La Croix Award For Lancaster, Calif., Operator

INSTRUMENTAL in saving three out of five lives, courageous and quick thinking Ann Arthur, operator for the General Telephone Co. of California in the firm's Lancaster exchange was the first California employe to be awarded the LaCroix Certificate of Meritorious Service including a cash bonus.

By exercising good judgment, Mrs. Arthur averted what might have been the tragic loss of an entire family. While operating a switchboard on the evening of October 29, 1954, she received an emergency call from a woman screaming for the police, but before a connection could be made with the local Sheriff's department the calling party hung up.

Mrs. Arthur notifed the Sheriff's office and a patrol car was dispatched to the calling address. When the police arrived they discovered that Otto Brust, 45, a Lancaster mail carrier had beaten his wife and teenage stepdaughter but had left the house shortly thereafter.

At 4:20 on the folowing morning, Mrs. Arthur received a second call of

A SMILE OF JUSTIFIABLE PRIDE cloaks the face of ANN ARTHUR, telephone operator for General Telephone Company of California in its Lancaster office as she accepts the LaCroix Award of Meritorious Service recently from EDWIN M. BLAKESLEE, company president. This award sponsored by the telephone company was presented to quick-thinking Mrs. Arthur for her part in saving three out of five lives in a Lancaster murder tragedy which occurred last year.

the same nature from the Brust residence, but in this case the calling party disconnected immediately. She again contacted the Sheriff's department which dispatched another patrol car to the Brust address.

At 4:25 A. M., a third call came from the residence, this time by a man calling a long distance number. Because of the unusual events leading up to this call combined with the sound of a child crying in the background, Mrs. Arthur monitored the conversation, overhearing the calling party tell the woman who had answered that he had killed the family and that when he hung up he was going to kill the woman's brother and then shoot himself.

As soon as the long distance call was disconnected, Mrs. Arthur called the Brust number, holding Otto Brust on the line for an alleged incoming call, then using another circuit, she contacted the Sheriff who picked up the call and held conversation with Brust until the deputies had time to arrive.

Otto Brust had murdered his wife, teenage stepson and had attempted to murder a teenage stepdaughter and commit suicide. The resourcefulness, initiative and quick actions of operator, Ann Arthur, prevented the murder of the teenage girl, the possible murder of a five year old son and Brust's suicide.

A native Oklahoman, Mrs. Arthur first came to California in 1941 and settled in Brawley where she attended high school. She later worked for the Pacific Telephone and Telegraph Company in that city from 1942-1948. In quest of a change of scenery, Mrs. Arthur with her husband moved to Durango, Colorado in 1949 where

Please Turn To Page 30

General Plant and Traffic Department Personnel of the Union Telephone Co., Owosso, Mich., recently participated in a days' instruction in all phases of Strowger Automatic Toll Ticketing Equipment. This type equipment will soon be installed in the Adrian, Dowagiac and Owosso offices of Union Telephone Company. Conducting the discussion were Fred Davis and F. L. Kahn of Automatic Electric Co. Shown above are: — (Back row standing): H. A. STRUM, W. W. AXFORD, W. F. HICKEY J. GABRIEL, W. J. MELCHERS, R. D. TREZISE, L. P. THOMAS, W. A. DURAND; (Front row standing) H. MILLER, R. BARNES, J. DUDEWICZ, T. V. STEIN, E. ZANTER, F. C. LICKTEIG, L. TINKLEPAUGH, G. HORTON, K. CHAVORA, I. L. FRY; (Front row seated) R. A. SMITH, W. J. HAMM, FRED DAVIS, T. A. SAUNDERS, F. L. KAHN, BURT RUFFNER, and GLEN COX.

OVER 3000 NOW IN USE IN UNITED STATES, CANADA & HAWAII

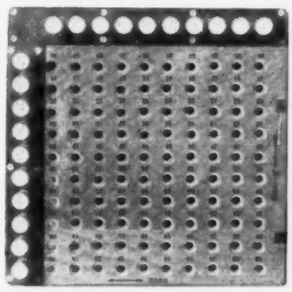
THE Murphy

(ONE MAN) CABLE TESTER

NOW, for the first time ONE MAN can test to identify cable pairs and do it three times as fast as two men could formerly do the job. "ONE-MAN" splicing crews are now a reality. On new cable work, labor costs are reduced by from 30% to 50%, depending on just how far you are prepared to go in utilizing the One-Man crew.

The still further improved Model C Meter Unit, Model CMU. Three Test Sets in one — THE MURPHY ONE MAN CABLE IDENTIFIER, The Buzzer Continuity Tester — and the Ohmmeter for locating trouble.

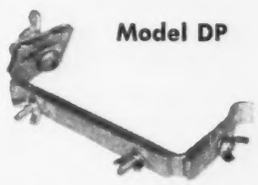
Model CMU Meter Unit



Model TTB, Combination Tag and Terminating Board

This is the new board that automatically sorts and groups the wires just the way you need them for connecting to the binding posts of the terminal board — only, in this case, the Terminal Board is built right into the Tag Board.

Model DP



Dual Purpose Clamp

This dual purpose clamp will hold the Terminating Board or the Meter Unit at any angle, above or below the strand, for convenience during use.

Durable Steel Cases For All Units . . . . . *Write for prices, terms, etc.*

MURPHY ENGINEERING LABORATORIES, INC.

4419 TULSA, HOUSTON 24, TEXAS — PHONE: OVerland 2-4000

to your good health —

HOT SPRINGS
NATIONAL PARK
ARKANSAS

World-famous natural thermal waters — only Spa in U.S.A.

R. E. McEachin, Gen. Mgr.

Arlington
HOTEL & BATHS

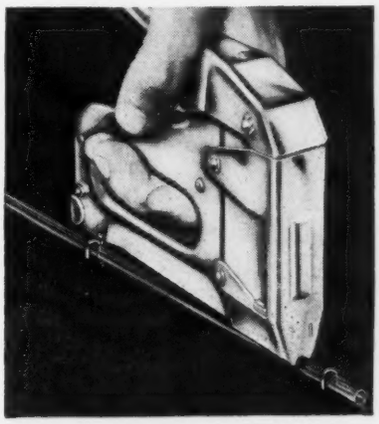
Renew your health at one of the South's finest resort hotels! Guest can go directly from room in robe and slippers to our own Bath House located within hotel. Bath House under regulation of the Department of the Interior.

All sports available — wonderful fishing and golf!

560 Rooms 70% AIR-CONDITIONED — All with bath or toilet.

NEW! Arrow's T-25 Staple Gun for Low Voltage Wire!

For Wire Up To ¼" in Diameter . . . Bell, Thermostat, Radiant Heat, Telephone, Inter-com, Burglar Alarm, etc.



Tapered striking edge gets into tight corners!

T-25 AUTOMATIC STAPLE GUN *for wires up to 1/4" in diameter. Uses 7/16" and 9/16" round crown staples, galalloy-coated for high rust resistance. Also available in rust-proof Monel wire.*
LIST $15.

SAFE!
Can't damage wire because staples automatically stop at right height! Won't even break ¼" hollow glass tubing.

FAST!
Proved by test 6 times faster than old hammer method. Saves you 70% in fatigue and efficiency . . . saves many dollars a year.

HOLDS!
New staples get tremendous holding power from tack points that spread to lock themselves into wood!

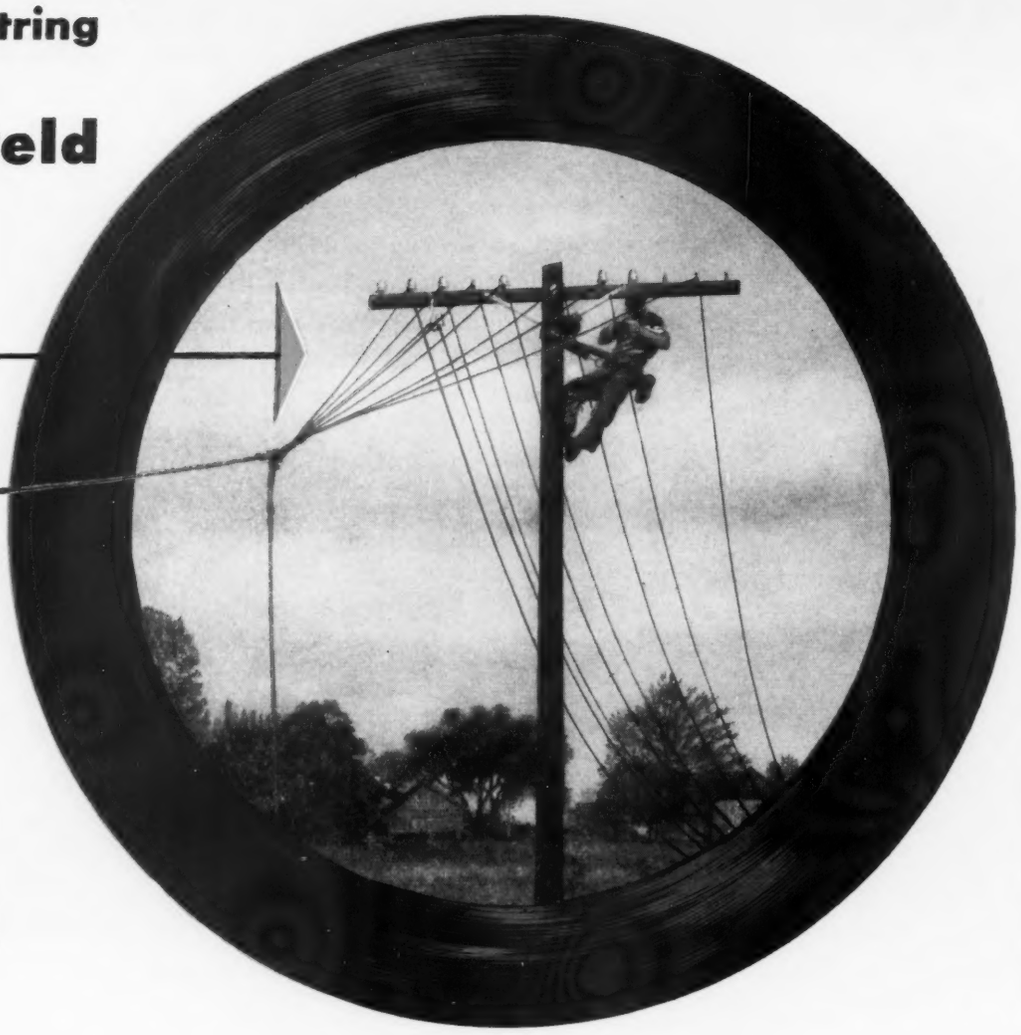
Write for catalog and information.

ARROW FASTENER CO., INC.
ONE JUNIUS STREET, BROOKLYN 12, N.Y.

When you string

Copperweld

here



you

GET MORE

Only non-rusting Copperweld* Line Wire gives you the permanence and long life of copper plus the strength of steel. And it's light in weight, smooth, easy to handle and economical to string, even on the longest spans.

MORE comes out here

Copperweld "talks better" than any other high-strength wire . . . retains its voice and high-frequency transmission properties for the life of the line . . . and it's the only long-span conductor suitable for carrier.

MORE goes in here

With Copperweld Line Wire, you can expect worthwhile savings in operating costs. That's because Copperweld lasts longer and requires less maintenance. The result—more profit for you.

*Trade Mark

COPPERWELD STEEL COMPANY
WIRE AND CABLE DIVISION *Glassport, Pa.*
For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

Copperweld TRADE MARK non-rusting **LINE WIRE**

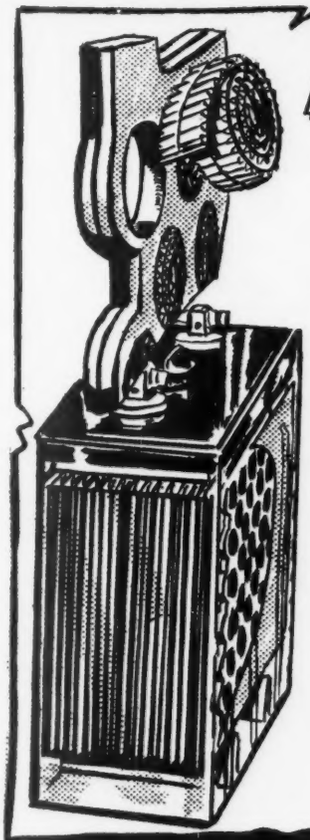
SOLD BY LEADING DISTRIBUTORS

FACTS ABOUT Exide®

MANCHEX® TELEPHONE BATTERIES

WHEN COMMERCIAL POWER FAILS...
EXIDES ASSURE UNINTERRUPTED SERVICE!

GUARANTEEING AN ABSOLUTELY DEPENDABLE SOURCE OF CURRENT FOR OPERATION OF DIAL EQUIPMENT IS THE VITAL JOB ENTRUSTED TO EXIDE-MANCHEX BATTERIES. COME ACCIDENT OR DISASTER, LIGHTNING OR WIND DAMAGE, EXIDES HAVE AN AMPLE RESERVE OF POWER... INSTANTLY AVAILABLE FOR EMERGENCY SERVICE. LOW OPERATING, MAINTENANCE AND DEPRECIATION COSTS MAKE EXIDES YOUR BEST BATTERY BUY- *FOR ALL TELEPHONE SERVICES!*



BUTTONS OF LEAD MEAN LESS COST FOR YOU

THE IMPROVED PLANTÉ TYPE POSITIVE PLATES OF THE EXIDE-MANCHEX BATTERY ARE OF THE MANCHESTER DESIGN—AN EXCLUSIVE EXIDE FEATURE. BUTTONS OF LEAD DELIVER THE POWER YOU NEED, WHEN YOU NEED IT. OVER A HALF CENTURY OF DEPENDABLE PERFORMANCE IN TELEPHONE BATTERY SERVICE HAS DEMONSTRATED THAT EXIDE BATTERIES WITH THEIR BUTTONS OF POWER ARE YOUR BEST POWER BUY—

AT ANY PRICE!

SINCE 1889 EXIDE ENGINEERS

HAVE EXPERIMENTED WITH THOUSANDS OF BATTERY IDEAS. THE RESULT IS THE HIGH QUALITY EXIDE-MANCHEX BATTERY SO WIDELY USED BY TELEPHONE SYSTEMS THROUGHOUT THE U. S.

LET EXIDE HELP SOLVE YOUR TELEPHONE BATTERY PROBLEMS. ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS. ❷ WRITE FOR FORM 4993, TO HELP YOU SELECT THE PROPER MANCHEX BATTERY.

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

Revenue Boosters

"On The Stand"

WHEN THE J. C. Penney store in Stockton, Calif. offered new planter telephone stands, it looked like the perfect "counter" to show off colored telephones. It didn't take the local telephone office long to arrange for a tie-in display right in the busy store. A Business Office Rep was on hand during the display's weekend run to give out leaflets telling the advantages of color extensions and to give further information to interested customers. Public interest in the new set ran high and a large number of prospects resulted.

■ ■ ■

Display in Banks Draws Good Interest

LAST SPRING, the New York Telephone Co. business office in Niagara Falls, like many other community offices, put in a display of colored telephones. Although it received considerable attention the local telephone team got to wondering how they could reach people who rarely visited a business office.

One of the city's banks became interested in the exhibit and arrangements were made to set up the display for a one month's stand. At the end of the month's run, a second bank in another section of the city had arranged to take the display.

Although no direct sales figures are available, the exhibit stirred up considerable comment and was well publicized by word-of-mouth. Telephone people in Niagara Falls feel that the bank displays played a part in raising their sales of colored telephones over 80%.

■ ■ ■

Merchandising By Truck

THE BELL Telephone Co. of Pennsylvania has recently placed in service in Pittsburgh a new delivery truck with a paneled showcase displaying the new color telephones, as an aid to its merchandising program. The truck also features a large red telephone on its top. The delivery truck is equipped with two-way radio, so that when a repairman or installer makes a color set sale he calls the test center which arranges delivery by the truck while the installer is still on the job.

■ ■ ■

Sales Meeting

OVER 2,000 Bell System and Independent telephone company people, in a recent sales meeting, learned the scope and details of the latest long distance merchandising methods. Although commercial and staff representatives in 45 cities in the United States and two in Canada "attended" the meeting, they did not have to leave their home areas.

The sales package was presented coast-to-coast by closed circuit television. More and more, American business is favoring this moderate-cost means of drawing together key personnel. Naturally, it works just as well for the Bell System. This particular sales package related to retail florists, although merchandising teams are working on many other applications of the telephone to business operations.

Four major benefits of "Flowers by Telephone" were highlighted: the florist and his customer know the order is received promptly by the out-of-town florist; that it can be filled satisfactorily; and that it can be delivered on time; and personal contacts are developed between the florists which lead to future business.

"Your children may not follow your advice, but they will follow *you!*"

(Continued From Page 26)

she worked for the Mountain States Telephone and Telegraph Company until 1952.

Returning to California in 1954, she began working for the General Telephone Company in Lancaster where she was destined to perform a service to the community worthy of the LaCroix certificate of meritorious service, one of four annual awards made by the company.

The LaCroix awards are named in honor of the late Morris Felton LaCroix, the man who is mainly responsible for having organized the General Telephone system. The awards, inaugurated this year, are a new plan to give General Telephone System employes recognition for acts of heroism and unusual meritorious achievement.

New Rates Approved For Dalton Tel. Co.

THE NEW YORK Public Service Commission has accepted a tariff amendment filed by Dalton Telephone Co. designed to increase rates to all subscribers by an estimated $1,500 annually effective November 1. The company serves about 220 telephone stations in the villages of Dalton, Swain and Hunt in the townships of Nunda, Portage, Grove and Granger in Livingston and Allegany counties through a magneto switchboard in Dalton.

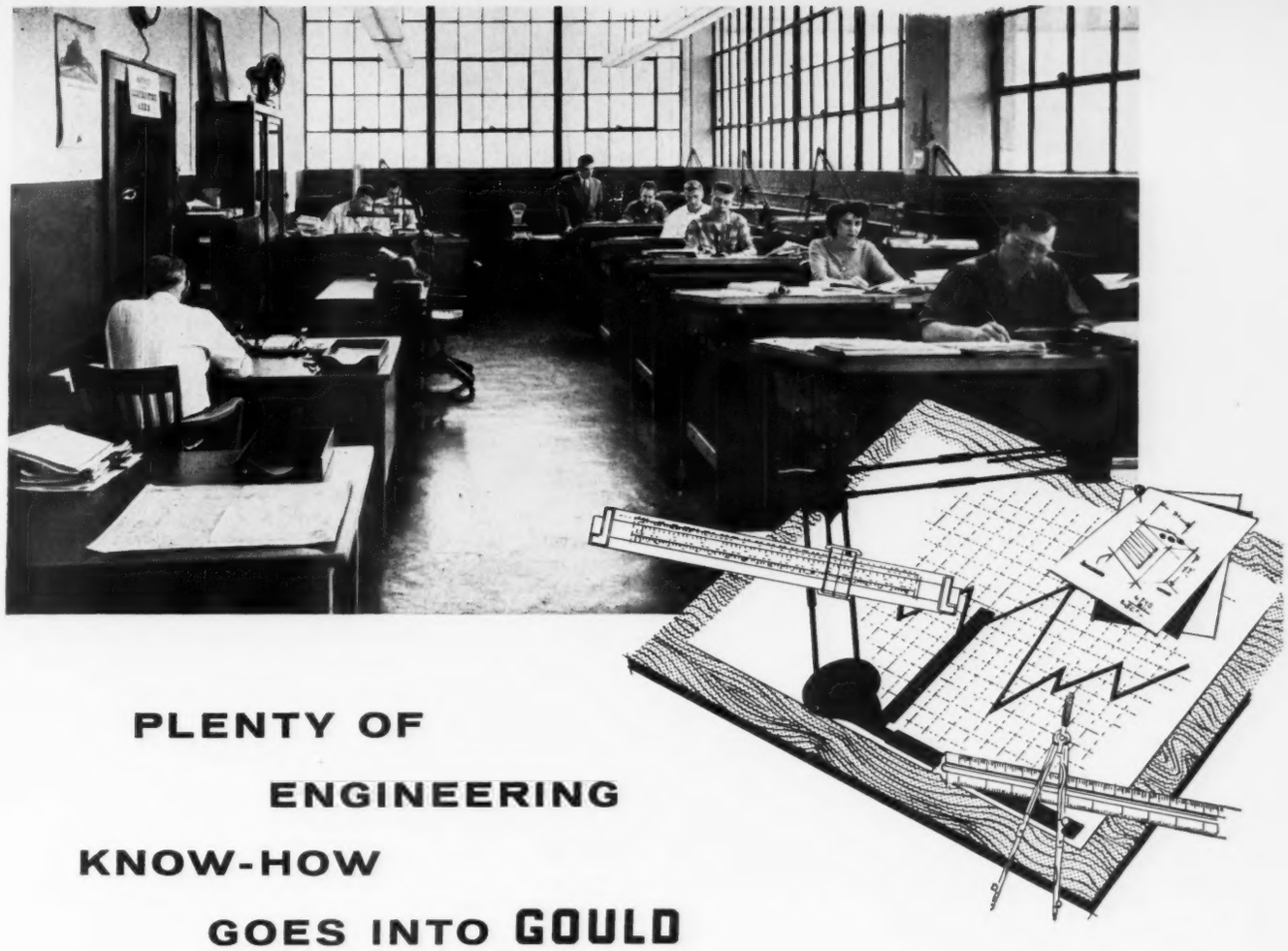
In filing its new tariff, the company reported an operating loss for 1954 and said additional revenues were needed not only to overcome such losses in the future but also to meet recent wage increases. At present, the company charges $2.50 monthly for both residential and business service. Under its new tariff, the monthly residential rate will be $3.00 and the business rate will be $4.00.

AT&T Names McNeely Executive Vice President

THE AMERICAN Telephone & Telegraph Company has announced the appointment of Eugene J. McNeely as executive vice president. He also was elected a member of the Board of Directors and appointed a member of the Executive Committee.

This change, effctive last month, is due to the desire of Hal S. Dumas, excutive vice president since 1951, to retire next summer.

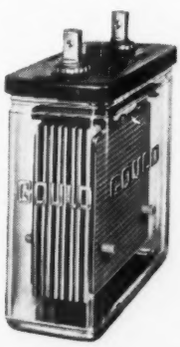
Mr. McNeely will assist the AT&T President Cleo F. Craig in the overall



PLENTY OF ENGINEERING KNOW-HOW GOES INTO GOULD RESEARCH BUILT BATTERIES!

On the drawing boards in the Gould engineering department, theory is made practical. Drawings and specification charts indicate the right plate size, battery case size, the eventual battery capacity, how grids should be cast, how active material should be mixed and how the battery should be constructed—to make sure you get the right battery for the right job!

One more reason why you get better batteries first from Gould!



America's Finest!
GOULD PLANTÉ
The Aristocrat of
Stationary Batteries

"BETTER BATTERIES THROUGH RESEARCH"

Always Use Gould-National Automobile and Truck Batteries

GOULD Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.

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TIDBITS

In Cincinnati, Ohio, a builder in a new merchandising plan, is selling new homes with "complete telephone service" included and installed. As an added inducement to buyers, the telephones are paid for one year in advance.

■ ■ ■

In Alameda, Calif., police early one morning received a telephone call from a woman who excitedly reported that sparks were showering out of a telephone booth in a nearby housing project. Officers nabbed two young men trying to cut open the coin box with an acetylene torch. Telephone workers later reported that the money in the box had been fused into a solid mass by the heat.

■ ■ ■

In Vancouver, a minister and his wife sleep soundly now, undisturbed by calls for bootleg whisky.

Some six months ago the minister was given a new telephone number, only one zero different from that of one of the oldest bootlegging establishments in town. Customers calling after legal hours for a bottle naturally tend to be a mite sloppy in their dialing and the minister began getting calls for whisky at all hours of the night.

When the bootlegger refused to change his number lest it cost him business, the minister appealed to his congregation. "Here is the bootlegger's number," he said. "Everyone please telephone this number at least twice a day."

■ ■

The bootlegger now has a new number and the pastor and his wife get a good night's sleep.

(Concluded From Page 30)

operation of the business and perform such other duties as the president may assign to him. He will be in charge in the absence of the president and Executive Vice President Dumas.

H. I. Romnes was elected a vice president of AT&T and will be in charge of the Operation and Engineering Department succeeding Mr. McNeely.

Mr. McNeely, a native of Missouri, joined Southwestern Bell Telephone Co. as a student engineer 33 years ago. Before becoming an AT&T vice president in 1952, he was president of Northwestern Bell. At AT&T he has headed first, Personnel Relations and then, the Operation and Engineering Department.

Mr. Romnes has been chief engineer in AT&T Operation and Engineering since 1952. He began his telephone career in 1928 as an installer for Wisconsin Telephone Co. Since then he has held various engineering posts with Bell Laboratories, Illinois Bell and AT&T.

R. C. Mitchell Joins General of Indiana

General Telephone Co. of Indiana, Inc., has named a new assistant controller, Ronald C. Mitchell.

Mitchell, a Navy veteran, formerly worked for an accounting firm, a country club, and a university, all in Toledo, Ohio. His first job after graduating from Lehigh University in Pennsylvania was assistant manager of the Toledo Country Club. He was then employed by Konopak and Dalton as a junior accountant. Before joining General Telephone, he was auditor and assistant to the controller at Toledo University.

Mitchell is assistant to General Telephone's new controller, Paul F. Hoff, who started his duties last August after transfer to the Indiana company from General Telephone Co. of Illinois.

AT&T President Honored By University Group

Cleo F. Craig, president of the American Telephone & Telegraph Co., was named last month by the Wharton School Alumni Society of the University of Pennsylvania to receive its 1955 Gold Medal of Merit.

The society said Mr. Craig was chosen for "outstanding business leadership." He became the medal's sixth recipient at the group's annual dinner in Philadelphia on Nov. 14.

A. G. Valantine Dies

Albert George Valantine, 84, former owner and operator of the Northern Kansas Telephone Co., Effingham, Kans., died October 10 at the Horton, Kans., hospital, where he had been a patient about 30 days. He had been a resident of Effingham and vicinity for 82 years.

In 1917 he became owner and manager of the Northern Kansas Telephone Co. and conducted the business until he sold it in 1946 to Herbert Welsh. He was active in community affairs.

He is survived by four daughters, a son, and eight grandchildren.

GET A LINE ON THE NEW FALL FASHIONS . . . the theme for a window display in Kaufman's department store in Santa Monica, Calif., cleverly utilizes General Telephone Co. equipment and illustrations to stimulate fall sales, providing a "dual" advertising boost for both firms.

Every Type of Telephone Cable From One Source . . . *ISE!*

Whether it's cable to serve a few portable telephones, or to build a vast network of communications—you can look to ISE, associate of International Telephone and Telegraph Corporation, for every cable need.

This worldwide service provides telephone cable of all types, in every gauge and quantity—for aerial, duct, submarine, and subterranean installation. Local exchange cable, long-distance audio frequency cable, multi-conductor carrier frequency cable, coaxial cable, special cable for television or other uses—ISE provides them all!

Every type offered must conform to the highest possible standards. Rigid production-testing guards every foot made for uniformity of dielectric strength, insulation resistance, and mutual capacitance. And behind all this quality control stand the worldwide IT&T research facilities!

ISE has the longest continuous record of service to Latin America for its cable needs. What better assurance of our meeting your requirements!

FACTORIES IN SOUTH AMERICA: Cia. Standard Elec. Argentina, S. A. Ind. y Com., Buenos Aires, Argentina • Standard Electrica, S. A., Rio de Janeiro and São Paulo, Brazil • Cia. Standard Electric, S. A. C., Santiago, Chile

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Central telephone exchange equipment for installations of any size, automatic or manual.

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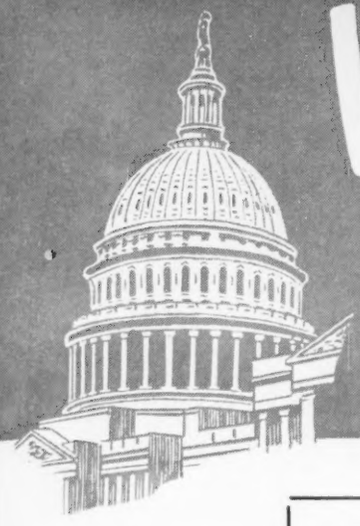
Microwave communications systems and equipment for pipelines, utilities, railroads, telephony, aviation.

Teleprinters for automatic transmission and reception of written messages.

All equipment for television and radio broadcasting and receiving, point-to-point communication.



Washington BUREAU REPORTS

By The Editors of "Telecommunications Reports"

CONGRESS looks into economic and social implications of automation . . . Western Union protests Bell System's multichannel private line "volume rates" . . . L. C. May, chief statistician, A T & T Co. predicts continuing heavy demand for telephones.

CONGRESS' look into the subject of automation and the "economic and social implications" of the new technology included testimony from three spokesmen for the telephone industry during the recent hearings of the Joint Congressional Committee on the Economic Report, which was given many opposing views as to the effects advanced mechanization will have on the nation's economy, particularly the employment force.

President Clifton W. Phalen of the Michigan Bell Telephone Co. and President Joseph A. Beirne of the Communications Workers of America, a CIO-affiliated union representing several hundred thousand workers in the Bell System and Independent industry, testified specifically regarding the telephone industry. President Robert C. Tait of the Stromberg-Carlson Co. also dealt with the telephone field in a discussion of automation in the electronics industry. Many other witnesses called by the Congressional committee during the lengthy late October hearings also used the telephone as a typical industry for study.

The hearings conducted by Rep. Wright Patman (D., Tex.) are not expected to produce any new legislation directly dealing with automation in the upcoming session of Congress, but they did inspire countless words on a subject which has captured the imagination of many and conjured visions that the nation is on the threshold of a push-button era.

Mr. Phalen told the committee that automation which has been in progress for many years can be expected to continue, but that he sees nothing in the present picture to change the long-term trend of increasing markets and increasing job opportunities in the Bell System.

But Mr. Beirne predicted a 200,000-job decline in telephone industry employment by 1965 unless a "tremendous business increase" offsets the effects of automation. "The only way employment opportunities can be maintained in the Bell System in the face of constant mechanization is to have tremendous increases in telephone service," the union official stated. "It is not enough to have large increases, tremendous increases are required."

Discussing the telephone, Stromberg-Carlson's "biggest business," Mr. Tait said that "despite the terrific pace with which telephone companies have been modernizing their plants and installing dial phones and automatic equipment, including now completely automatic toll ticketing systems, there are more people employed by the telephone companies today than ever before. True, there are fewer people per telephone, but there are millions more telephones."

Mr. Phalen, after pointing out that technological progress has improved the quality and usefulness of and satisfied the demand for service while cost has remained at a reasonable level, told the committee: "I want to emphasize that none of the improvements now being made and none of the developments that we foresee is of a nature that will revolutionize the business or substantially change its present character. They will be a continuation of the evolutionary changes that have been going on over the years . . . Force adjustments will be handled so as to produce a minimum of hardship, applying procedures which have been used successfully in the Bell System over many years."

The Michigan Bell President said the basic reasons for the introduction of automation in the telephone industry are threefold: "to improve the quality and usefulness of telephone service, to satisfy the demand for service, and to keep the cost of our product at a reasonable level. The result has been a marked expansion of telephone usage over the years. Telephones and telephone calls have increased many times more rapidly than population, and even more rapidly than gross national product . . .

"The increased telephone usage resulting from scientific and technological progress has, in turn, helped to expand employment. This will be clear by comparing the present-day situation with that in 1920, the year conversions of telephones to dial operation first began in the Bell System. At the present time about 85% of Bell System telephones are dial-operated. Operators are now dialing directly about a quarter of all calls outside local areas. Yet employes number nearly three times as many as in 1920, when there were no dial telephones, and over twice as many as in 1940, when about 60% of telephones were dial."

Discussing automation as it relates

"What a drive . . . almost all the way to the next pole!"

● Perhaps no one ever used a telephone line to measure the length of a golf drive, but it might be a good idea. Especially when the poles are strung with Amertel 135!

Amertel 135 is high-strength, permitting longer spans. In bad weather it will withstand greater ice and wind loads than ordinary BB wire. It's better in other ways, too . . . superior transmission qualities, lower installation cost, lower maintenance costs.

Write today for more information to American Steel & Wire Division, Rockefeller Building, Cleveland 13, Ohio.

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TELEPHONE & TELEGRAPH WIRE

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Here's how you can enjoy extra profit dollars with

YORK-HOOVER
Model 4986
SERVICE BODIES

THE MODEL 4986 SERVICE BODY is an especially well-designed service and repair body, engineered to be installed on a standard ¾ to 1 ton chassis.

THE PRIMARY PURPOSE of the Model 4986 Service Body is to speed up maintenance and repair work by contributing an orderly method of carrying necessary tools and materials.

STURDY, ALL-METAL CONSTRUCTION provides rugged durability—a factor that enables the Model 4986 Body to "take it" for everyday service work.

COST-SAVING EFFICIENCY is the end result ... the reason why for over 60 years York-Hoover Equipment has maintained a high record of performance, low operating and maintenance costs.

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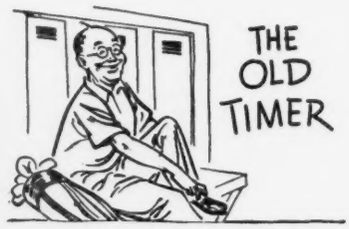
to personnel matters, Mr. Phalen said: "I would sum up the effect of technological improvement on our employes this way. It has brought increasing customer usage which, in turn, has created more jobs. And they are better jobs — jobs that pay much higher wages and jobs that compare favorably with those in other industries. Moreover, the 'real wages' of telephone employes have increased appreciably and their purchasing power is at new high levels. This increased purchasing power benefits not only our people but is good for the economy as a whole."

Mr. Beirne, who confined his discussion to the Bell System, told the committee that the CWA has never "resisted mechanization for the sole purpose of maintaining jobs for



"Some people grow when given responsibility; others merely swell."

workers we represent." But, he said, the union feels that the employer "has a responsibility to introduce conversion to machinery in such a way and at times that such changes will have the least possible detrimental effects upon the economy of the industry and the country," and that "benefits derived from mechanization should be shared by owners of the industry, employes in the industry and the public at large."

Several other witnesses from other industries appearing before the Congressional committee took the position that automation has created employment opportunities in the telephone field.

Their views were summed up in the statement of Marshall G. Munce. Chairman of the Industrial Problems Committee of the National Association of Manufacturers, who pointed out that employment in the telephone industry has increased 130% since 1920 and added that the rate of increase "is well in excess of the rate of increase of employment in the economy at large."

He declared that the chief reason

Here's Proof of Performance...

Rochester Gas & Electric Co. reports:

"Since 1930, no pole replacements due to preservative failure"

Any interruption in power service is a serious occurrence for a utility company. That's another major reason why so many utilities guard against one cause of failure by using long-lasting, maintenance-free, pressure-creosoted utility poles.

One such company, Rochester Gas & Electric Company, Rochester, N. Y., tells of its experiences with creosoted poles. Mr. E. B. Robinson, Purchasing Agent, says, "We started using pressure-creosoted pine poles around 1930, and today we have about 150,000 poles in all, and as far as I know, they are doing fine. We specify 8-pound empty cell treatment."

Another Rochester official, Mr. W. B. Kenyon, Electrical Distribution Engineer, also speaks highly of pressure-creosoted poles. "Yes, we started using pressure-creosoted poles back around 1930, and they have served us well. As for replacements due to the failure of the preservative, we have none to report."

For more information on the advantages of pressure-creosoted poles and on the quality preservative, USS CREOSOTE, get in touch with the nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Mr. W. B. Kenyon with one of the 150,000 pressure-creosoted utility poles.

You can obtain clean pressure-creosoted poles upon specification without sacrificing pole service life.

USS CREOSOTE

SALES OFFICES IN PITTSBURGH, NEW YORK, CHICAGO, CLEVELAND, SAN FRANCISCO AND FAIRFIELD, ALA.

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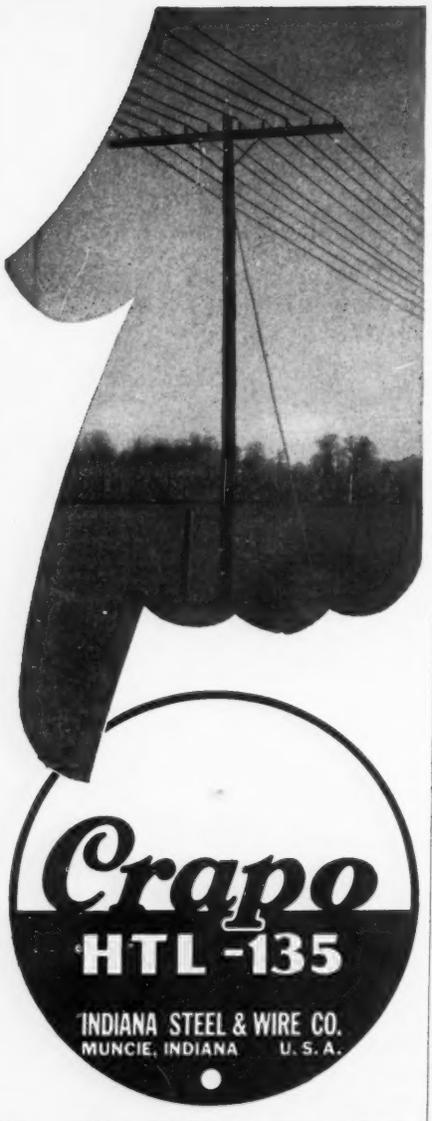
UNITED STATES STEEL



LOWER
Cost Per Mile

● Efficient rural telephone circuits can be built at minimum overall cost where Crapo HTL-135 High-Tensile Line Wire is used to full advantage. For Crapo HTL-135 makes possible spans up to 350 feet in heavy, 540 feet in medium and 650 feet in light loading districts. Longer spans mean fewer pole structures with substantial savings in material and labor costs per mile.

The rugged tensile strength of Crapo HTL-135 and its heavy galvanized coating provide dependable and economical service life on typical rural lines.

Ask your jobber for details or write direct for engineering data!

INDIANA
STEEL & WIRE COMPANY
Muncie, Indiana

for this situation is that the increased availability of telephone service — resulting from better and cheaper ways of producing it — has led to an enormous expansion in its use. The number of telephones in use is four times as great as in 1920, Mr. Munce pointed out, a factor that has more than offset the reduction in the amount of labor required per unit of product or services.

"Multichannel Tariffs"

WHETHER the "Bell System" will be permitted to offer multichannel private line "volume rates" to large users of leased facilities has been thrown open for FCC decision, with the Commission suspending until Feb. 1 the multichannel tariffs which had been scheduled to go into effect Nov. 1, and ordering a hearing on the subject.

The Commission directed an investigation into the reasonableness of the tariffs after the Western Union Telegraph Co. had filed a protest.

The proposed tariffs affect private line telephone, telephotograph, teletypewriter and morse, and signal pulse transmission channels, furnishing on a 24-hour, seven-day-a-week basis. It would apply a unit system of measurement, under which each private line channel of a customer between the same two points would have the following units of measurement: telephone, 1; telephotograph, 1.50 or 1.25, depending on classification; teletypewriter or morse, .50; and signal pulse, .25. If the units applied added up to three or more, the customer would be eligible for the multichannel rate.

A sliding scale of declining rate is then applied to additional units (not channels) over three. Another sliding scale would apply to interexchange channels of more than 250 miles in length, with 90% of the regular rate charged for the next 250 miles, and so on down to 60% for additional miles over 1500.

"SAGE" Communication Service

SECRETARY of Defense Charles E. Wilson has advised Comptroller General Joseph Campbell that the Defense Department definitely will ask Congress for specific authority to contract for communications services for the US Air Force Air Defense Command's SAGE (semiautomatic ground environment) system next year and that meanwhile work on the project will go ahead, after receiving a letter from Mr. Campbell which, in effect, authorized SAGE contracting.

Mr. Campbell adhered to his previous position that the Air Force does not have statutory authority to enter into 10-year contracts, but he said he recognizes that the program requires "lead time for planning and construction."

Tomball, Texas

FURTHER hearings on the application of the Southwestern Bell Telephone Co. for a certificate of public convenience and necessity in its proposed acquisition of the Tomball, Tex., Telephone Co. have been scheduled to begin Monday, Dec. 12. by FCC Examiner H. Gifford Irion.

The Commission ordered the case remanded to the examiner, to take further evidence and testimony and issue a revised initial decision. The US Independent Telephone Association and the Texas Telephone Association intervened in the case in opposition to Southwestern Bell, and since the issuance of Mr. Irion's first decision — looking toward rejection of the Bell application — Tomball groups favoring the acquisition have been granted FCC permission to intervene.

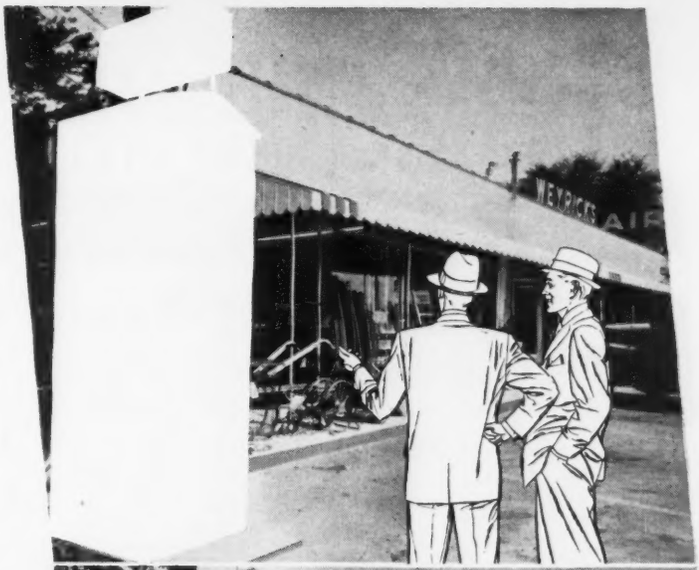
"Busy Days Ahead"

WITH THE nation's economy in a long-term period of dynamic growth and a continued rise of volume of industrial activity at around 4% a year assured, there will be a continuing "heavy demand for additional telephone service" and construction activity by the telephone industry for the next several years, a meeting of security analysts in Washington was told by L. C. May, Chief Statistician of the American Telephone & Telegraph Co.

"To meet this anticipated growth in business," Mr. May said, "the Bell System will have to continue expanding its plant and facilities for a considerable period in the future. During the 10 postwar years total construction by the System has amounted to almost $14 billion and reached an all-time yearly high in 1955. Looking ahead, construction activity is expected to continue at high levels and, in fact, may average for the next several years as high as the 1955 record total."—THE END.

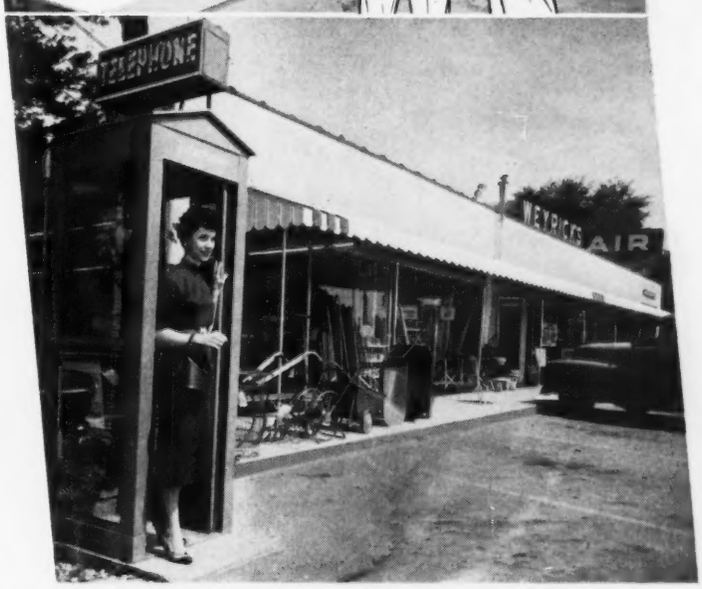
Idea...

An Indiana Independent, alert to new business opportunities, spotted this service station and thought it would make a likely paystation site. He was *right!* This location . . .



Pays Off

an average of $82.50 per month, and is proving a great convenience to service station customers. Remember . . .



For You...

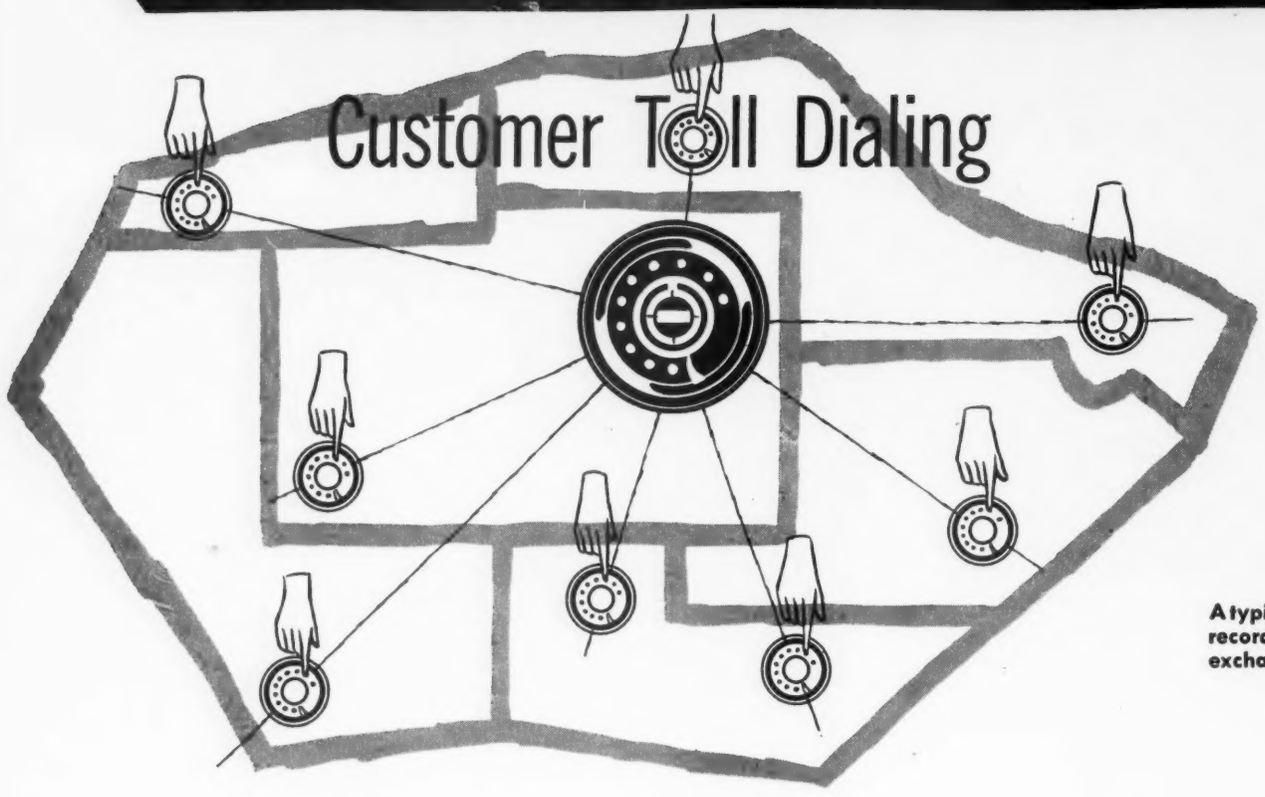
too, locations like this could be paying rich rewards. Now, while the weather is good, go out and check the service stations in your area—and the drive-ins, highway junctions, bus stations, motels, and trailer camps, too. Install Autelco Paystations in substantial booths; mark them with big, colorful signs—and you'll surely build paystation revenue. Write for Catalog TM 4078-B and booklet, "How to Make Paystations Pay." *Address: Automatic Electric Sales Corporation,* 1033 *W. Van Buren St., Chicago* 7. *Or call HAymarket* 1-4300.

AUTOMATIC ELECTRIC

ORIGINATORS OF THE AUTOMATIC DIAL TELEPHONE

NETWORK...OR NATIONWIDE

Customer Toll Dialing



A typical bank of recorders in an exchange.

The new North AuTollizer automatic toll ticketing system enables any telephone company to:

Prepare its system for participation in Direct Distance Dialing on a self-sufficient basis.

Handle network "short haul" toll calls on a profitable basis.

Handle all station-to-station toll calls on a speedier and more efficient basis, with fewer personnel problems.

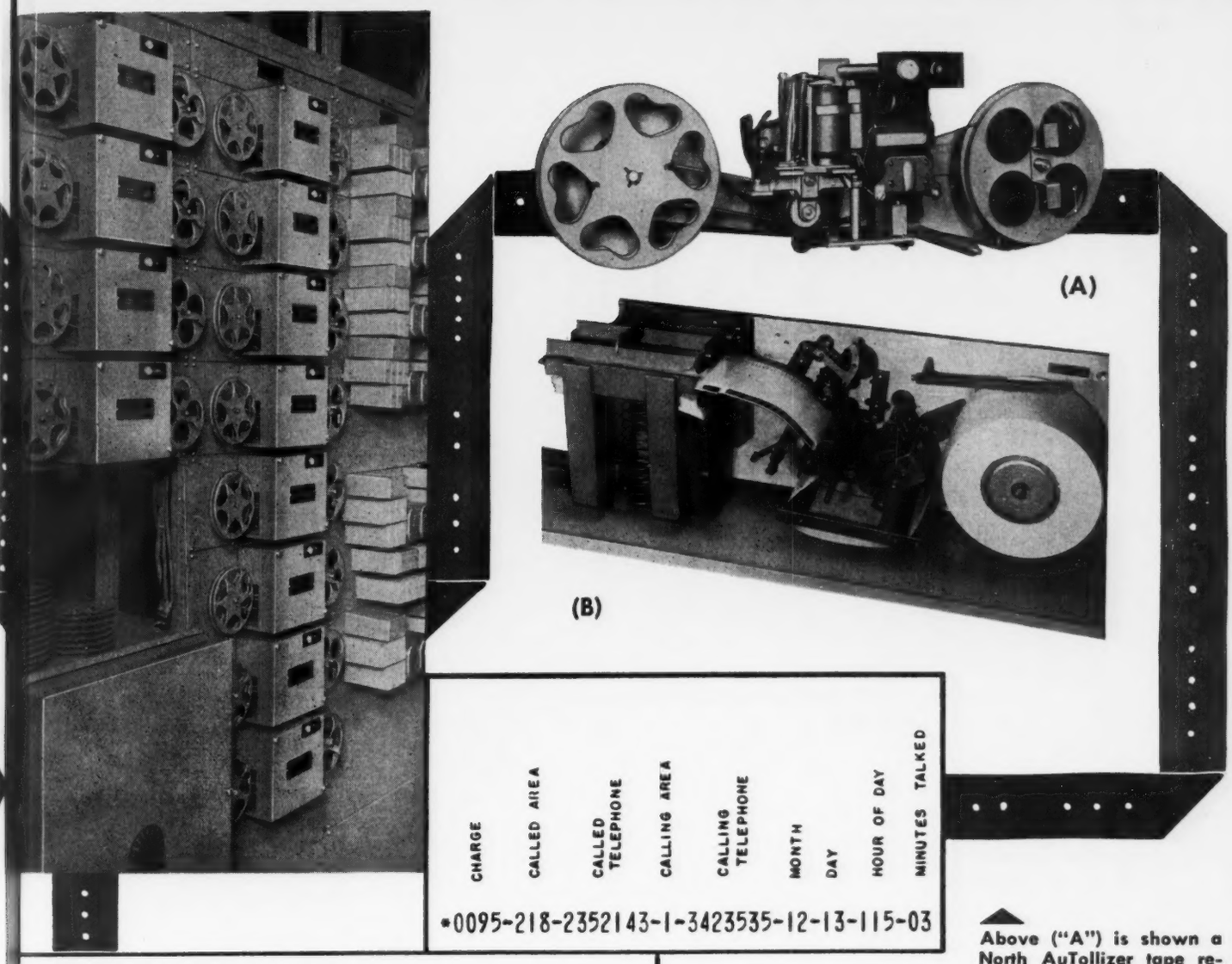
An important new AuTollizer feature is the provision for automatic identification of the calling station. No operator supervision is required. The customer does not dial his own directory number. Every toll call is automatically routed, regardless of the number of offices involved. Alternate routes are selected by the equipment if the first choice trunk is busy.

The equipment prints complete billing information on toll tickets. Alternatively it can be connected to any standard card-punching machine to provide for automatic billing.

For more details regarding AuTollizer operation

ASK FOR BULLETIN AT-558

NORTH



(A)

(B)

CHARGE	CALLED AREA	CALLED TELEPHONE	CALLING AREA	CALLING TELEPHONE	MONTH	DAY	HOUR OF DAY	MINUTES TALKED
•0095-	218-	2352143-	1-	3423535-	12-	13-	115-	03

Above ("A") is shown a North AuTollizer tape recorder. It punches all information regarding toll calls into inexpensive paper tape.

("B") This is the Teletype printer. Actuated by an AuTollizer computing unit, it produces tickets bearing complete billing information.

This is a sample ticket for a distant toll call. Note that the national area code is included. This information is "read" from the recorded tape and analyzed by the computing unit.

- Automatic Identification
- Automatic Routing
- Alternate Route Selection
- Automatic Ticketing

NORTH AuTollizer® System

Available in Canada through ERICSSON TELEPHONE SALES of CANADA, Ltd. 1410 Stanley Street Montreal 2, P.Q.

NORTH ELECTRIC COMPANY

655 South Market Street, Galion, Ohio

Automatic's pointers for plantmen and managers

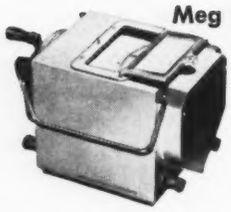
make a "bee line" to trouble

with proper testing equipment

Your men can go straight to any trouble in your plant, and get to work on it quickly. That's how these test units pay for themselves in the time they save. They are all high-grade instruments – sturdy and easy to operate.

For other testing devices, and everything else in telephone supplies, see Automatic's Supply Catalog #8000. It shows over 2500 items available through our five conveniently located warehouses.

Meg Ground Tester



Designed for measuring resistance to earth of installed ground connections such as rods, pipes, buried plates, metallic structures, etc. Read resistance value of ground under test – just like reading a voltmeter – in one simple operation, without adjustments or calculations. Comes in three scale ranges

Cat. No.	Scale Ranges	Price
530	0-30 and 0-300 ohms	$237.50 each
571	0-60 and 0-600 ohms	237.50 each
573	0-300 and 0-3000 ohms	237.50 each

Automatic Electric Type 71 Carrier and Transmission Multi-Meter

(Complete specifications in Automatic's Catalog 8000.)

A compact, easy-to-carry, vacuum-tube volt-ohmmeter, which gives easy-to-read readings of power-level, AC-DC voltage and resistance. Supplied with ground lead, eight-foot power cord and test probes with removable alligator clips.

Cat. No.	Description	Price
S-7687	Type 71 Multi-Meter	$84.50 each

Shallcross 6105 C-L-R Bridge

The Shallcross 6105 C-L-R Fault Location Bridge is a capacitance, resistance, and inductance bridge for direct, or comparison, measurements. Wheatstone bridge may be connected for loop, Murray or Varley test. Transistor oscillator and amplifier are powered by self-contained battery—which makes this a compact and portable test set.

Only one switch, for rapid change of range and uses. Decade switches are eliminated, values read on ONE precision potentiometer dial. Calibrate knob permits recalibration balance of Wheatstone Bridge from panel. Use operator's headset when making capacitance measurements no other accessories required.

Cat. No.	Type	Price
6105	Shallcross 6105 C-L-R Bridge	$190.00 each

Prices are F.O.B. Chicago, and subject to change.

Use Automatic's Supply Catalog

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REPUBLIC CREOSOTING COMPANY
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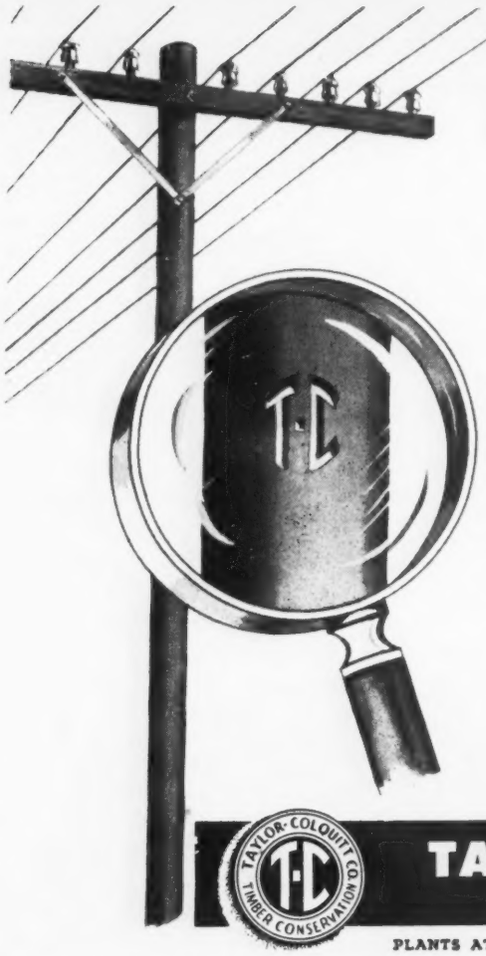

Put 'em up and forget 'em!

Vapor-Dried Poles

That's what T-C pole users do. Here's why . . . they know that T-C's exclusive Vapor-Drying process permits more uniform penetration of creosote or penta. They know that this deeper, more uniform penetration enables Vapor-Dried poles to retain their preservative longer . . . thus making them the most durable available. They know they can install T-C poles . . . one or a thousand . . . and get long years of trouble free service from each one.

Join the ever-growing list of telephone companies who specify T-C Vapor Dried poles and put 'em up and forget 'em.

Distributed by AUTOMATIC ELECTRIC SALES CORP. and LEICH SALES CORP.

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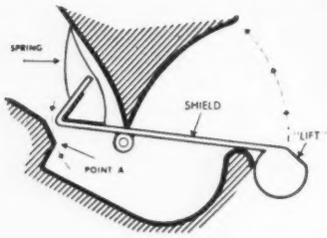
SPARTANBURG, SOUTH CAROLINA

PLANTS AT SPARTANBURG, SOUTH CAROLINA AND WILMINGTON, NORTH CAROLINA

Don't Be Cheated By Coin Return Chute Stuffers

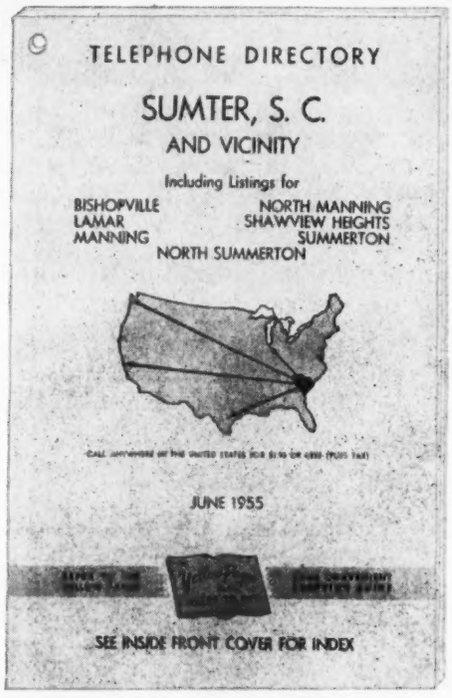


Install THE SHIELD* Coin Return Protector

Deliberately plugged Coin Return Chutes cut Pay Station revenue because many customers assume that telephones are out of order if their coin is not returned. They are also a source of bothersome complaints, and can lead to substantial losses if refunds claimed by customers are not covered by collections from the station (as a result of stuffed chutes). Aware of this drain on revenue, the world's largest telephone company is replacing its entire coin return chute mechanism in almost all pay stations . . . at considerable expense . . . in an effort to eliminate chute stuffing. Now, with The Shield Coin Return Protector — the *only* anti-stuffing device available to independent telephone companies — you can gain similar protection, on any make pay station, at less than one-third the cost of replacing entire chute mechanisms.

*Patent Pending **WRITE FOR CIRCULAR 455-A**

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD **COLUMBUS 21, OHIO**



Sumter Telephone Company directory printed by

R. R. DONNELLEY & SONS COMPANY

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The new TELETYPE 28 Printer offers these outstanding features...

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2. **TYPEBOX PRINTING** . . . instantly removable Typebox for changing type or cleaning.

3. **SELECTOR** . . . high speed, low current pulling magnet selector.

4. **POWER KEYBOARD** . . . light, uniform key touch gives new operator ease, efficiency.

5. **CONTROLS** . . . all at front, all by keyboard button, for operator's convenience.

6. **SIGNAL GENERATOR** . . . single contact design . . . polar or neutral signals.

7. **ALL METAL CLUTCHES** . . . No slip . . . no idling load . . . infrequent lubrication.

8. **BUILT-IN STUNT BOX** . . . offers unlimited variety of signaling, switching, control operations.

The new high speed Teletype 28 printer marks a new era in the field of printing telegraphy. It is a machine engineered not only to meet today's most complex communication problems . . . but with built-in facilities to solve new problems as they arise.

If you would like complete information on this new Teletype Printer, write to our new customer service office: Teletype Corporation, Dept. T-11, 4100 Fullerton Ave., Chicago 39, Ill.

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Delivery...

Making available the very best equipment and materials is one thing, but getting them to you on time, wherever you happen to be, and at a minimum shipping cost is another. That's something we've always boasted about and rightfully so, too. For Kellogg with six branch warehouses and over 100 supplier distribution points at its disposal, can ship your order from the location nearest you. This way we're able to get the order to you faster and at a savings in shipping costs. Why not give us a try on your next line supply order?

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A Division of International Telephone and Telegraph Corporation

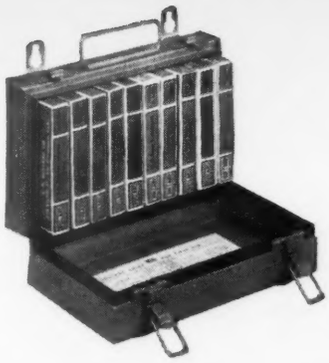
Sales Offices: 79 West Monroe Street, Chicago 3, Illinois

KELLOGG DIVISION OF IT&T

for

Line Supplies

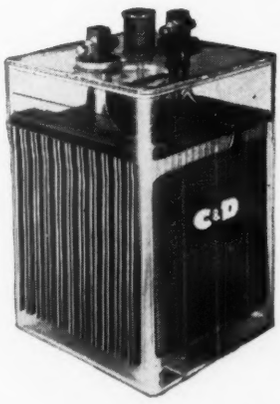
UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION



First Aid Kit recommended for use by maintenance, operating crews or individuals. Each kit contains up-to-date approved directions — Each kit is clearly marked. Completely weatherproof and dustproof. Made by E. D. BULLARD COMPANY.

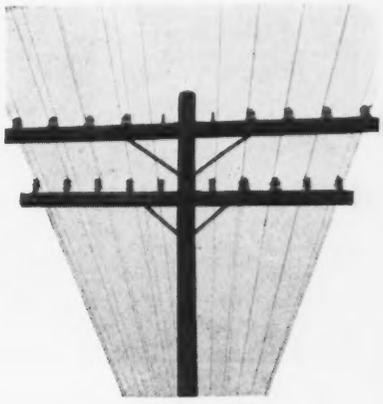
These Double-Faced Signs are made of long-life porcelain enamel fused to heavy gauge steel. Clear visibility and permanent, bright colors are features of signs made by INGRAM-RICHARDSON MANUFACTURING CO. Available in either plain or activated surface.

Save Three Ways . . . on materials, manhours, and maintenance with INDIANA STEEL & WIRE CO.'s Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy, ductile coating of zinc.

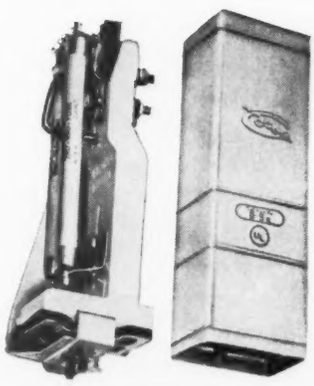


Extra-Long Life! — The suspended and supported plate construction is an exclusive feature of C&D BATTERIES. Choose C&D's PlastiCal (lead-calcium grids) for life expectancy of 25 years. For 14 years expectancy, specify PlastiCell (high tensile lead alloy grids).

The Key to Clear Party Lines. The signal tone produced by the LORAIN HOWLER demands attention; it is loud yet safe—the ideal method for getting that misplaced receiver on the hook without making a service call. LORAIN PRODUCTS CORP.



Finest Quality Cross-arms available for immediate delivery from nearby warehouses. Pony or standard cross-arms in fir and pine. Choose either treated or untreated Fir Cross-arms, or the Penta-treated Pine. CONTINENTAL CROSS-ARM CO., INC.



A Single Circuit Protector for both indoor and outdoor use. The Type 09U is equipped with Tru-Gap dischargers, carbons, 7 amp. fuses, a porcelain base and a gasket and locking device. A product of COOK ELECTRIC COMPANY.

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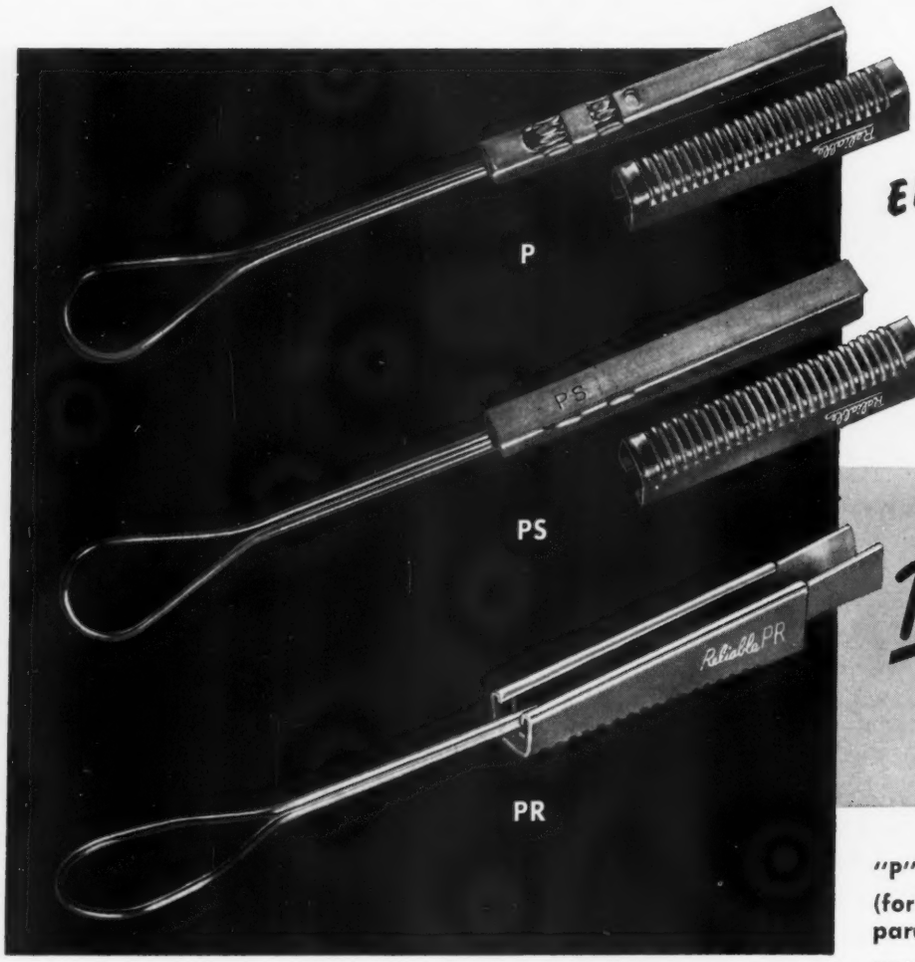
DEPEND ON RELIABLE...MANY PLANT MEN DO!



ENGINEERED FOR THEIR JOBS

Reliable

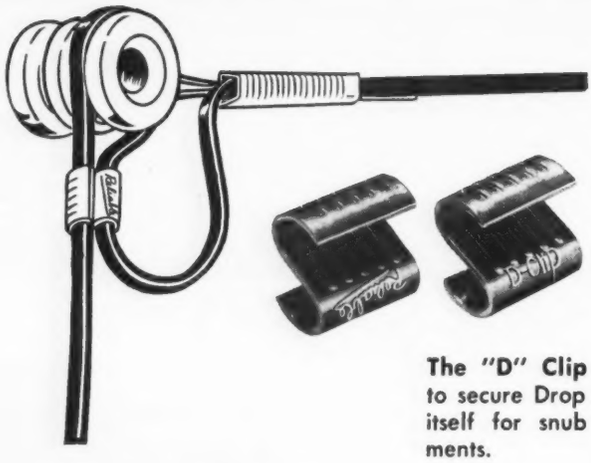
DROP WIRE CLAMPS

"P" Clamp
(for Nos. 17 and 18 AWG reinforced parallel)

"PS" Clamp
(for No. 17 non-reinforced, and most other construction to No. 20)

"PR" Clamp
(for Nos. 14 and 16 AWG twisted pair and parallel; suitable for Nos. 17 and 18 reinforced parallel Neoprene jacketed drop wire)

There is perhaps no better testimonial than the quantities of Reliable Drop Wire Clamps that are supporting Drops in many places. The record speaks for the design, the precision and the quality.



The "D" Clip is used to secure Drop Wire to itself for snub attachments.

Low cost, easy to use. Installed with standard pliers.

RELIABLE ELECTRIC COMPANY
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Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

Over 45 Years Service to the Utilities

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24 Times A Year

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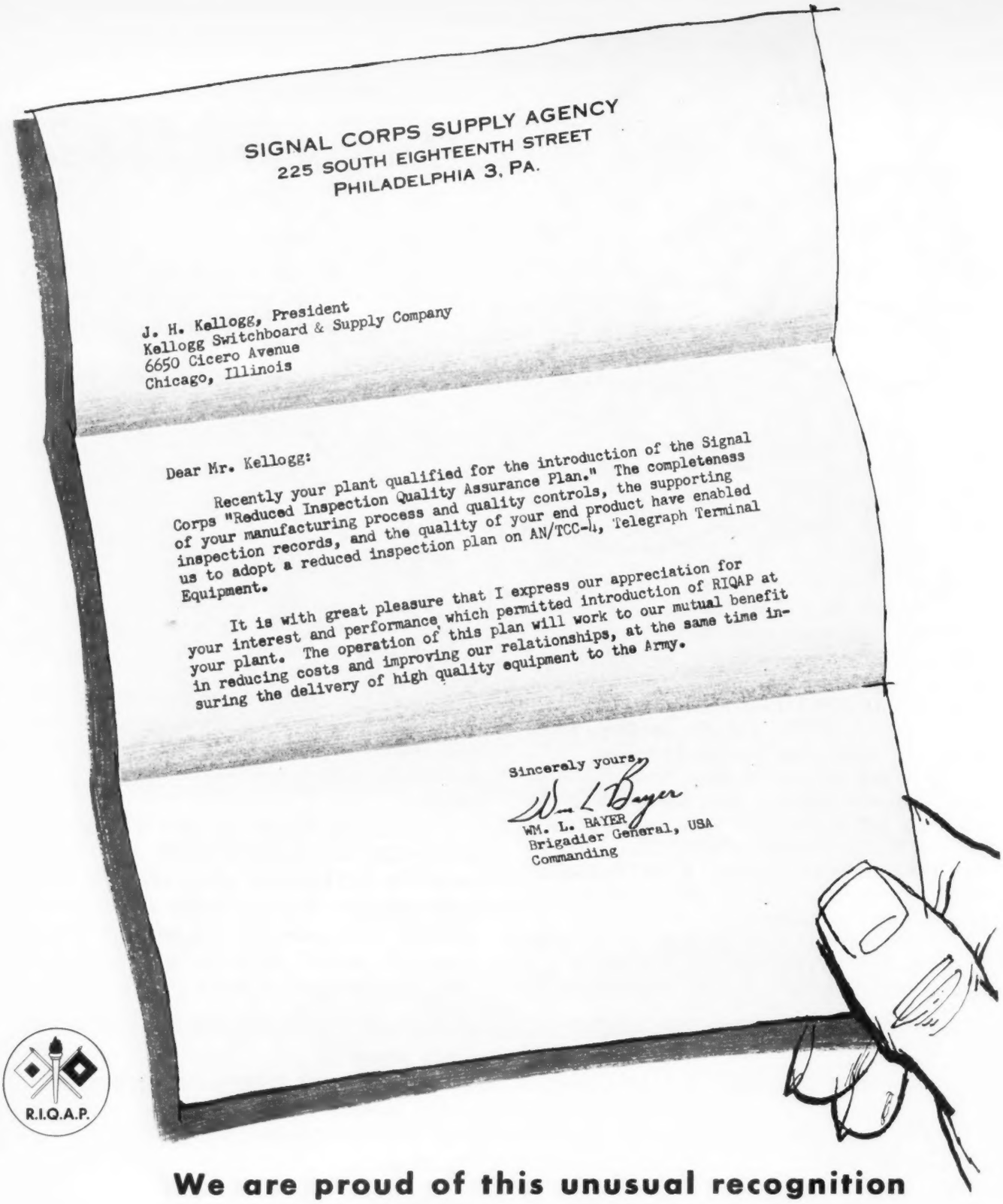

SIGNAL CORPS SUPPLY AGENCY
225 SOUTH EIGHTEENTH STREET
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J. H. Kellogg, President
Kellogg Switchboard & Supply Company
6650 Cicero Avenue
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Dear Mr. Kellogg:

Recently your plant qualified for the introduction of the Signal Corps "Reduced Inspection Quality Assurance Plan." The completeness of your manufacturing process and quality controls, the supporting inspection records, and the quality of your end product have enabled us to adopt a reduced inspection plan on AN/TCC-4, Telegraph Terminal Equipment.

It is with great pleasure that I express our appreciation for your interest and performance which permitted introduction of RIQAP at your plant. The operation of this plan will work to our mutual benefit in reducing costs and improving our relationships, at the same time insuring the delivery of high quality equipment to the Army.

Sincerely yours,

WM. L. BAYER
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We are proud of this unusual recognition by the Signal Corps

BUILDING THINGS RIGHT IS A HABIT AT

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EDITORIAL

Telephone Engineer

"....Engaged In A Common Endeavor."

AT DINNER a few nights ago we had the pleasure of entertaining three men — the manager of a small Independent telephone company, an executive of a large Independent, and an official of a Bell System company. The steaks were fine and the conversation strictly on the telephone side.

As time slipped away one of our guests made this observation: . . . *"Day by day it becomes apparent that all telephone companies, Bell and Independent are engaged in a common endeavor — providing the best in telephone service for the whole country. Our success depends on our working together . . ."*

For us, our guest had neatly wrapped up the prime reason for the great strength of America's telephone industry. It seems to us that strength is great because Independent and Bell companies are successfully working together and sharing the responsibility for service to business, to people in their homes, and to the government. This sharing of responsibility and joint allegiance to the job of providing the world's best telephone service is, in the final analysis, remarkable.

It becomes even more remarkable when we realize that while nearly two million long distance calls a day are handled jointly by Independent companies and Bell System companies the customer feels that only one, *"his"* company is taking care of *"his"* business. He is unaware his message may involve facilities and operators of several separate companies, Independent and/or Bell.

This working together shows up in all phases of the telephone industry's job. Some 30 million telephone conversations pass over Independent company lines daily and the Independents originate annually early 370 million toll messages — with a revenue value of about $240,000,000 — which flow over both Independent and Bell System facilities to the telephones of Bell and Independent company subscribers.

In turn, nearly an equal number of toll messages is originated by Bell customers to the telephones served by the Independents.

This successful integration and interrelation of the many separate communication companies is, we believe, one of the best examples of what can be accomplished when two great segments of an industry join together in a common endeavor.

Without such careful aiming at a common goal we doubt that much of the progress made in these postwar years would have been possible.

In our opinion, this *"working together"* has accomplished many things. First, it has enabled the telephone industry to double the number of telephones in service — from less than 28 million at the end of 1945 to nearly 56 million today. It has been an important factor in the growth in the number of share owners, the $10-billion increase in investment in the industry, and the fact that today there are 280,000 more people working to provide telephone service than a decade ago.

Continuance of this policy of working together, will, we believe, assure an even brighter future for the telephone industry. Already showing up as part of that future are forecasts that the number of telephones operated by Independent companies, the number of long distance messages originated, and the revenues originated from these messages will increase in about the same manner as in the Bell System companies.

This means the job of all telephone companies will grow in size and importance. In fact, we believe the job of keeping abreast of today's expanding population and economy — and tomorrow's — is really the greatest challenge the industry has ever faced.

That challenge will be met, we feel sure, by telephone people working together — doing just as our dinner guest said . . . "engaging in a common endeavor."

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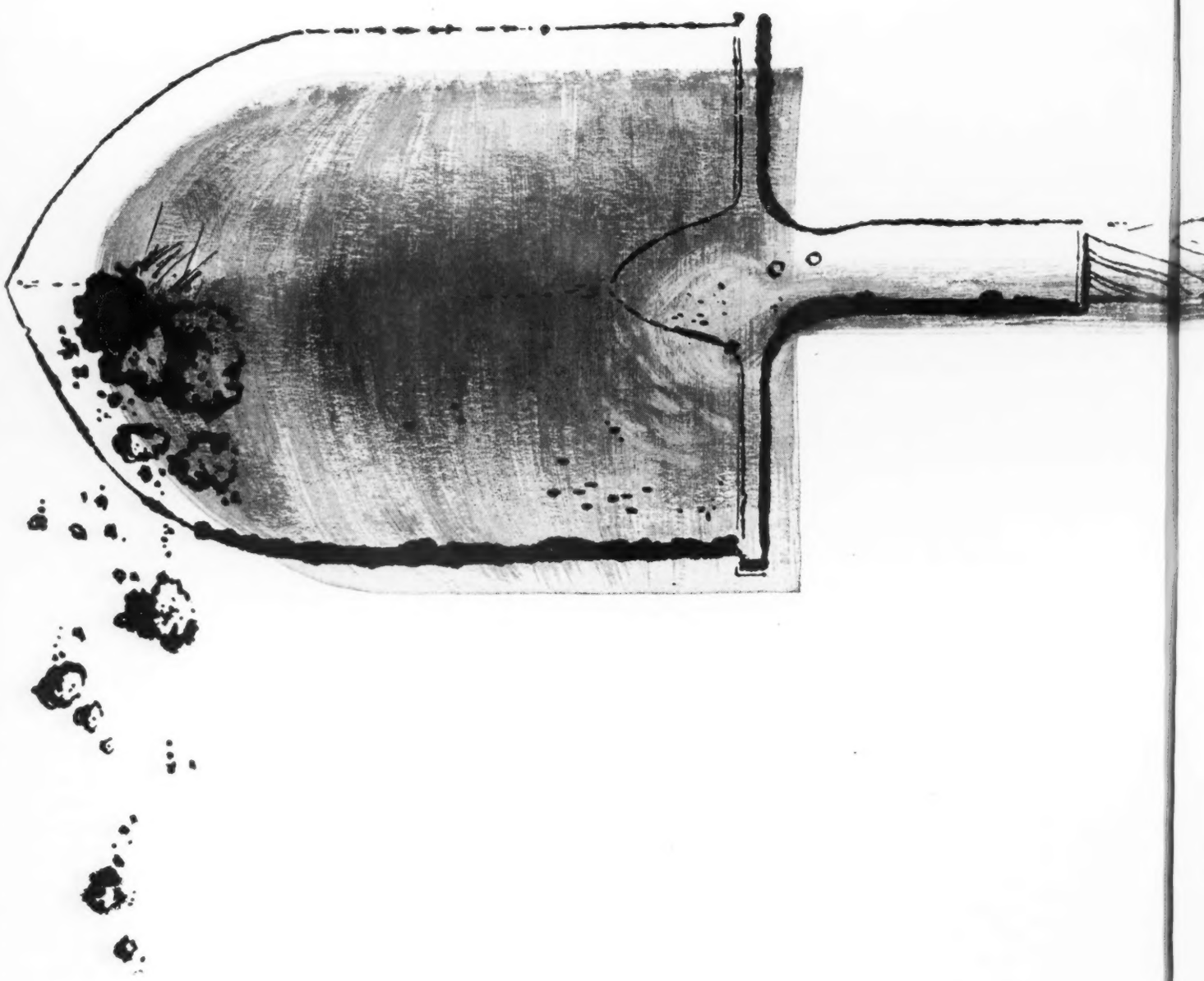
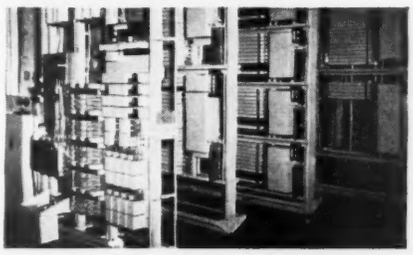
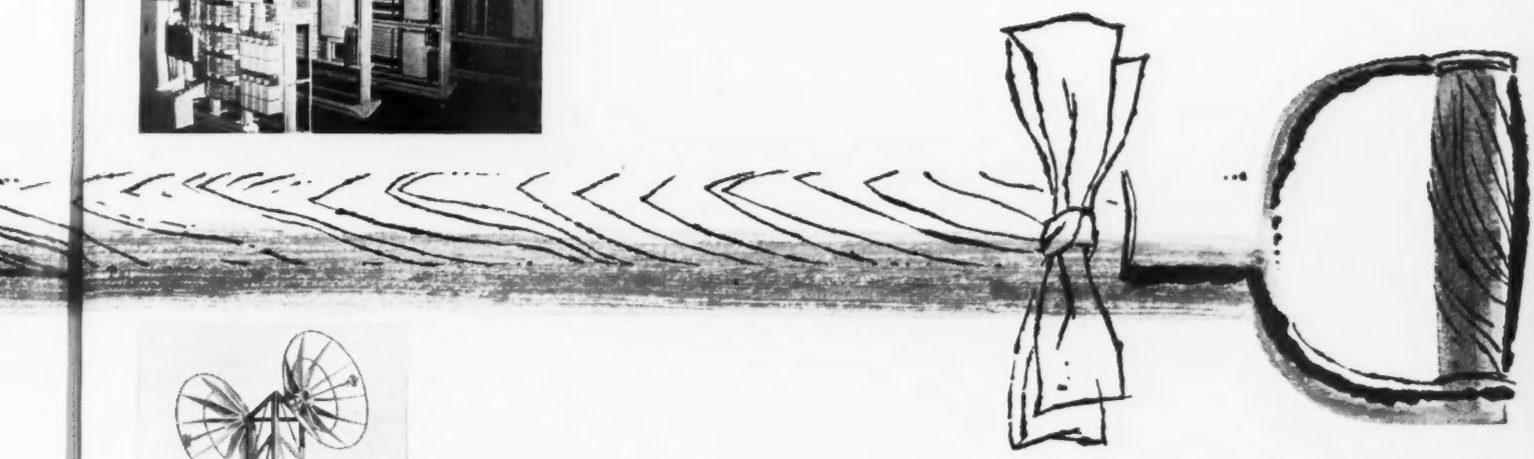
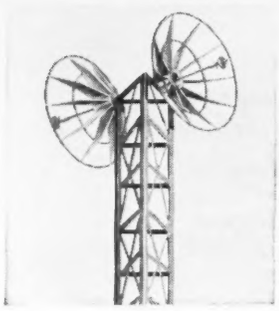
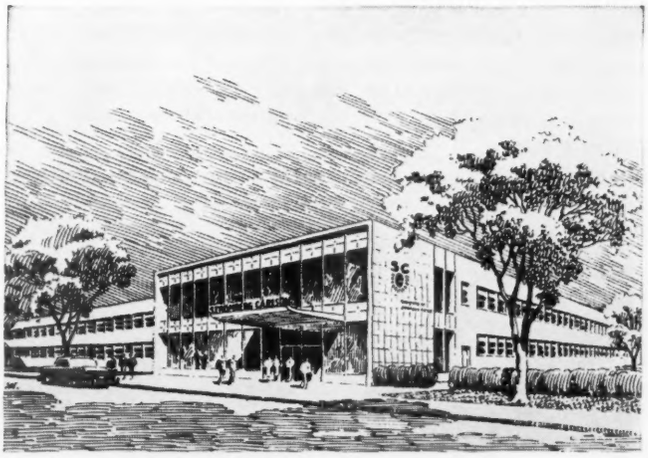








For you... a dynamic groundbreaking



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For you, this means more and more telephone equipment backed up by dynamic modern research facilities, manufactured in a jet-age factory, and guided by a growing corps of leading experts in communications research, automation, and telephone technology.

These experts come from all over the country. They step into a new era where their own talents and abilities find exciting new challenges, when they join Stromberg-Carlson.

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A DIVISION OF GENERAL DYNAMICS CORPORATION

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Helms A Franklin MO 5-7910
Henderson Matthew JA 5-5353
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Hodgman Stewart LI 7-0618
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Holman Howard H MA 7-3692
Hough W G ME 4-2650
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Illad Louis S EX 4-9006
Imel George M Admin 3460
Ingalls Bernard RO 9-5422
Inson Daniel H EX 2-6221
Inscoe W Edward UN 4-1693
Irvin J W TU 6-2351
Ives Thomas K EM 9-2192
Jackson Albert H AD 4-9113
Jackson Paul G WA 3-5056
Jacobs Wiley W LA 2-9809
Jaffe Louis I AM 5-5943
James Ernest L PE 3-6795
James Leroy JE 3-1603
Jenkins Wright Wm CA 6-8150
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King Robert T HO 3-4340
Kissell Vernon C HU 4-1342
Knight L Stanley RA 7-5650
Kyle John H MA 4-5906
Lamb Donald K UN 3-7086
Lansdale Howard HO 2-9152
LaRue Ralph S TU 8-3254
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Lester Robert B O&E Traf 7054
Little Clyde M UN 4-1154
Lowe Linwood L JE 5-6178
Luck Paul RA 5-7231
Lyon Franklin M LE 3-2693
Pollard Herman NA 8-4366
Richman Paul UN 8-0840
Usher Joseph A AD 7-5800

With the advent of direct distance dialing, it is essential for users of P.B.X. Boards to have a visible record of all frequently called numbers. Flexoline Keyshelf Directory units are specifically engineered and designed for use on P.B.X. switchboards and furnish the long-wished-for flexibility of individual Flexoline listings on the keyshelf.

A unique and time-saving feature has been developed and incorporated into the units—the frames are self-indexing. The last Flexoline strip on the front of each frame is *visible.* Thus listings may be added or otherwise changed without concern for label changing or other indexing detail. The expansion factor within each side of each frame is filled with blank Flexoline strips until each space (easily adjustable to any location) is wanted for an actual listing.

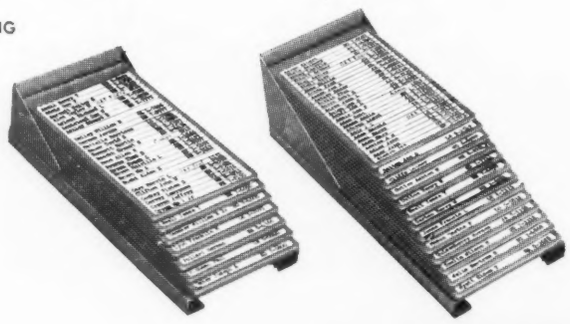
FOUR SIZES

7 frame units with 390 or 490 listings capacity
13 frame units with 712 or 890 listings capacity

Attractively finished in Greytan—frames are aluminum and are removable. Non-skid corrugated rubber strips are mounted on the underside of the base, which is of "bridge" construction for straddling divider strips on switchboards. (When specified, flat base units will be supplied, with overall corrugated rubber attached to bottom.)

The Flexoline strips are furnished in sheets of 42 strips per sheet, pre-scored horizontally to the 1/6" standard typewriter spacing. With each unit, a supply of Flexoline is included which is sufficient to completely establish the reference listings and to accommodate several hundred listing changes.

PAT. PENDING



Here are two informative booklets illustrating and describing various units which have been designed for, and use-tested by, telephone companies throughout the country.
Send for your copies today!

Acme representatives will gladly cooperate with you in promoting "Make Long Distance Calls by Number"

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District Offices and Representatives in Principal Cities

Helen Newberry Residence Hall, University of Michigan, where students of Public Utility Executive Program have lived.

"School Days"

B EARLE BLOMEYER*

***IN RECENT** years the growing recognition of the need for executive training schools and for refresher courses has brought about the establishment of special courses at a number of leading colleges and universities. This article describes the author's experiences while attending the University of Michigan's Public Utility Executive Program.*

CAN YOU define a Free Enterprise economy, and explain the difference between the theories of Karl Marx and Lord Keynes? Do you know what effect the devaluation of the dollar has had upon the plant value of your company? Are you familiar with the various indicies and reports of business activities that are available to all business men in this country? Are you familiar with various court decisions concerning the regulation of public utilities, and do you know how each of those decisions might affect your company? Do you know why your company decided to issue the particular type of securities it has outstanding, and how the coupon rate or price of issue of each type was determined?

These, and many other similar questions, are important for all utility executives. It is probable that almost all of the top executives of large utility companies could answer such questions without any difficulty. However, to be able to answer such questions on the basis of experience alone requires a varied background of experience that is extremely difficult to obtain in the present era of specialization. Thus, since very few individuals who are at present attempting to work their way up into the top ranks will have an opportunity to work in all fields of a particular business, the best method of obtaining such knowledge is to go to school.

Those individuals who are fortunate enough to have had an opportunity to attend college, quite often find that they did not study subjects that are adaptable to their present work, or find that over a period of years it is difficult to remember everything that was included in the college courses.

In my own case, I graduated from Northwestern University School of Business in 1936, having majored in Economics and Public Utility Regulation, with many related courses in Accounting, Finance, Law, etc. However, in the short 19 years that have passed since that time I have found that my everyday work has crowded the memory of many details out of my mind.

Growing Recognition For Executive Training

IN RECENT years the growing recognition of the need for executive training schools, and for refresher courses, has brought about the establishment of such special courses at a number of leading colleges and universities. Some of these courses last from one week up to a number of months, and cover a great variety of subjects.

As I have recently had an opportunity to attend one of these special

**At the time of enrollment in the course mentioned in this article, Mr. Blomeyer was president of the Nebraska Continental Telephone Co., Columbus, Nebr. However, since that time he has been transferred to the headquarters office of the Continental Telephone Co., Chicago, Ill.*

Class of 1955 University of Michigan Public Utility Executive Program.

courses, prepared exclusively for public utility executives, this article will be devoted chiefly to a description of that particular course, but I am certain that almost any of the courses that are available will cover somewhat the same subject matter. The value of any particular course will depend upon the qualifications of the instructors and upon the amount of time devoted to each subject.

I attended the University of Michigan Public Utility Executive Program, conducted at Ann Arbor, Michigan for one month from June 19 to July 15, 1955. This program was started at the University of Michigan during the summer of 1951, and has been continued each year since that time. It was originally developed with the assistance of an advisory committee made up of utility representatives. Approximately 70 students can be accommodated each year, and selections from applications are made by the advisory committee. At the present time the telephone industry is represented on the advisory committee by Harold H. Schroeder, vice president, Michigan Bell Telephone Co. and by James F. Van de Vusse, president, Illinois Telephone Co.

The class of 1955 of the University of Michigan Public Utility Executive Program had 69 students, representing 39 power companies, 20 telephone companies (six Bell System and 14 Independents), five combined power and gas companies, four gas companies, and one street railway company. These students came from 28 States, the District of Columbia, Canada, and Bolivia. All students were housed together in the Helen Newberry Residence Hall, a regular university dormitory, and all meals were served in this same building. Classes were held in the Business Administration Building, about three blocks from the dormitory. In general, all accommodations were entirely satisfactory, and the meals were excellent. In addition, students had access to many other facilities of the University, such as golf course, swimming pool, library, and Union Building.

The courses of study presented at Michigan in 1955 were as follows:

SUBJECTS	*TEACHERS*
Accounting	**William A. Paton, Edwin Francis Gay University Professor of Accounting, University of Michigan**
Business Conditions	**Paul W. McCracken, Professor of Business Conditions, University of Michigan**
Enterprise Economics	**Clare E. Griffin, Fred M. Taylor, Professor of Business Economics, University of Michigan**
Financial Administration	**Merwin H. Waterman, Professor of Finance, University of Michigan**
Human Relations in Management	**L. Clayton Hill, Professor of Industrial Relations, University of Michigan**
Management Functions	**Erwin H. Schell, Professor of Business Management, Massachusetts Institute of Technology**
Public Relations	**Edwin Vennard, Middle West Service Company, Chicago** **Robb M. Winsborough, Middle West Service Company, Chicago** **Arthur W. Page, Consultant, New York**
Public Utility Regulation	**Ben W. Lewis, Professor of Economics, Oberlin College**

In addition to the teachers listed above, two other members of the faculty of the University of Michigan served as administrators for the program. They were Robert L. Dixon, Professor of Accounting, who was Director of the Program, and William C. Tuthill, Instructor in Accounting, who was Assistant Director of the Program.

Formal classes were held every morning from 8:30 A.M. until 1:00 P.M. six days a week. Each subject included a total of 12 hours of such formal classroom work during the four weeks of the school. In addition, most afternoons were spent in informal sessions covering the same subjects, to provide more time for group discussions, questions, or elaboration of certain points in greater detail. On many evenings an outside speaker was invited for a dinner meeting. Such speakers at recent programs have included, among many others:

H. Warren Brooks, vice president in charge of finance, The Cleveland Electric Illuminating Co.

Joseph M. Dodge, chairman of the board, the Detroit Bank

Bertil Ohlin, professor of Economics, University of Stockholm

Howard C. Greer, vice president, Indianapolis & Louisville Railway Co.

Dexter M. Keezer, vice president, McGraw-Hill Publishing Co.

One of the outstanding features of the entire program is that all of the teachers devote their full time to the program, and are available for discussions at all times. The visiting professors live in the same dormitory with the students, and the other professors spend a large part of their free time there, and eat almost all meals with the students. This arrangement provides excellent opportunity for informal discussions on all subjects.

Prior to attending this program at the University of Michigan, I had read about programs of this type,

and had a number of questions about them in my own mind. Because many readers may be wondering about such programs, I will try to give some of the answers that I discovered this year.

First, I wondered if such a program would be directed primarily at training power company executives, since the attendance generally has a larger number of power company employes than of other utilities. I found that the course I attended was not biased in this respect, and in my opinion was equally as valuable for employes of any type of utility.

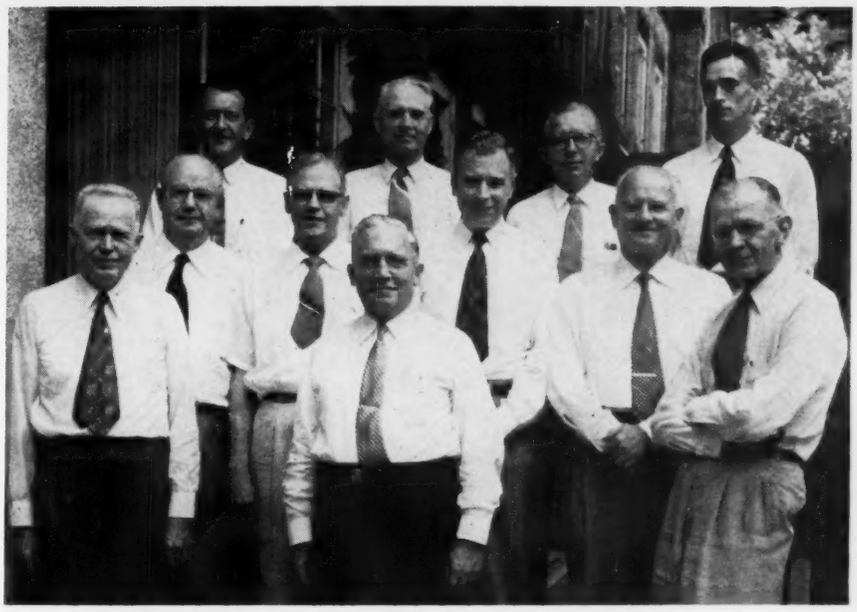
Second, I wondered what experience or qualifications might be of greatest value when considering enrollment in a program of this type. The stated qualifications of this particular program were, "those who have a wide background of experience, who are in positions of high administrative responsibility, and who are prospects for advancement to top managerial positions. Enrollment is limited to those who are at present employed by a utility company."

Of necessity, such stated qualifications must be rather broad. In my opinion the greatest value of a program of this type will be realized when the student is an individual who has had specialized training in one department, such as engineering or accounting, and is being trained for a promotion that will require a broader background.

Another possibility for maximum value is a top executive in a smaller company, who, because of the size of his company, has not obtained experience in all phases of utility management, such as security issues, rate cases, etc.

I do not mean to imply that other individuals will not obtain benefit from such schooling, but only that the cases I have mentioned will obtain the greatest benefit. As President of Class A telephone company at the time of enrollment, I had already had experience in various fields, such as proceedings before regulatory authorities, issue and sale of new securities, accounting matters, etc., and I still found this supplementary training to be very valuable.

Those individuals who did not have an opportunity to study such subjects prior to starting on a career, will, of course, find supplemental



Faculty of University of Michigan Public Utility Executive Program for 1955.

training to be extremely helpful. However, there are also many utility executives who specialized in engineering courses in college, and did not have an opportunity to study economics, finance, or the theory of regulation. Again, such individuals who have specialized schooling will find that the broader background provided by studying other subjects will be advantageous for promotion into top positions.

Third, I wondered about the problem of covering up for an employe who would be absent from his normal duties for any great length of time. This problem is, of course, more difficult for a small company than for a larger one that has a larger staff. I have come to the conclusion that in most cases it will not be as difficult as it might seem at first. This problem might be one reason for selecting a comparatively short school rather than one lasting a number of months. I am firmly convinced now that the advantages of the school will overcome the temporary disadvantage of being short handed for a while.

Fourth, I wondered about the value of becoming acquainted with various utility executives outside of my own particular field. All of us recognize the value of meetings, such as conventions, with other telephone men. What tangible value is there, though, in a telephone man meeting with a power man, or a gas man? I found that regardless of the type of utility, we all have essentially the same problems, and that any comparison of experiences and ideas creates a fertile field for thinking about our own problems in a different light. For example, we in the telephone industry can certainly benefit from merchandising ideas that power and gas companies have been using for years.

"A Refreshing Pause"

ALONG THIS same line of thought, another intangible benefit that I found from the school was the opportunity to get away from my own company for a while and to look at it from the viewpoint of a stranger.

A few years ago I had the honor of addressing the Georgia Telephone Association on the subject of "The Pause That Refreshes." I said then, and I can emphasize even more now, that it pays occasionally to stop and look at your company, your work, and yourself to see if any improvements can be made.

Now I realize even more than ever the value of that suggestion, after having had a chance to explain my company to a group of strangers who were interested in its operations as compared to their own company. Some of the most valuable lessons in this school came from assigned problems of analyzing each company, its financial structure, its earnings, and why each one had decided to issue the particular type or quantity of securities it has outstanding. These problems offered each student a challenge to pause and refresh himself about the operations of his own company, and another challenge to de-

"Cutover smiles" last for years afterwards...

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Go and speak to the owner of a Leich Dial System after it's been in operation for two or three years.

For by then the fanfare has been passed over and he's down to the serious business of making this equipment give good service and produce a profit for his company.

He'll still be smiling happily, and will tell you that the Leich Dial System is a wise investment for the following reasons:

DEPENDABLE ALL-RELAY SERVICE

Leich's all-relay operation eliminates the need for elaborate switching mechanisms which are apt to wear and require maintenance or adjustment. The simplified arrangement means that there are thousands fewer soldered connections which are another source of potential trouble. We've had customers tell us that they were amazed at how long and how well their Leich Dial Systems would operate without a single case of trouble.

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All the equipment jacks-in on bays which are wired for their capacity of 100 lines and 15 links. Thus, additions or regrouping of equipment can be done quickly and inexpensively by jacking-in the desired equipment. There's no wiring, no soldering, no factory installers. Compare these costs: You can add ten lines to a Leich Dial System for $175.00. A link can be added to a finder-connector switchboard for $323.00.

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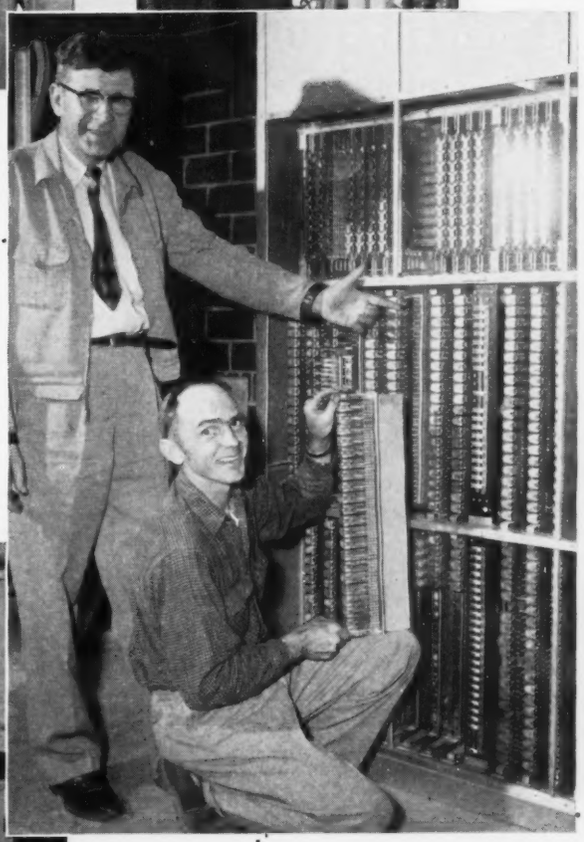
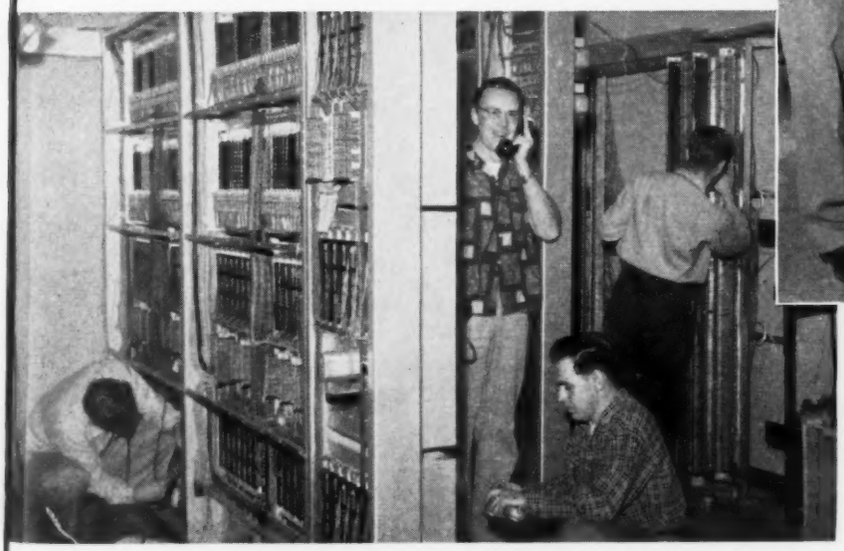


SYSTEMS _



TOP: *Fouke, Arkansas—Southwest Arkansas Telephone Cooperative*

CENTER: *Rice, Minnesota—Benton Co-op Telephone Company*

LEFT: *Chewelah, Washington—General Telephone Company of the Northwest*

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907
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Safety Locking Chain Tightener—attaches quickly and easily . . . locks securely so that platform can't be loosened accidentally. **Grip-Tread Surface**—platform is topped with Goodyear Grip-Tread for a safe, sure footing. **Superior Strength**—platforms are made from carefully selected Douglas Fir boards . . . each board is individually tested before shipment. **End Cleats for Added Safety**—end cleats show lineman his position on the platform.

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cide why his company was performing in its own particular fashion.

Fifth, I wondered whether it would be possible to obtain the same benefits by study at home. As it happens, I had an excellent opportunity for a comparison this year, because during the past winter I had taken part in a group studying economics under a study course sponsored by the Chamber of Commerce of the United States.

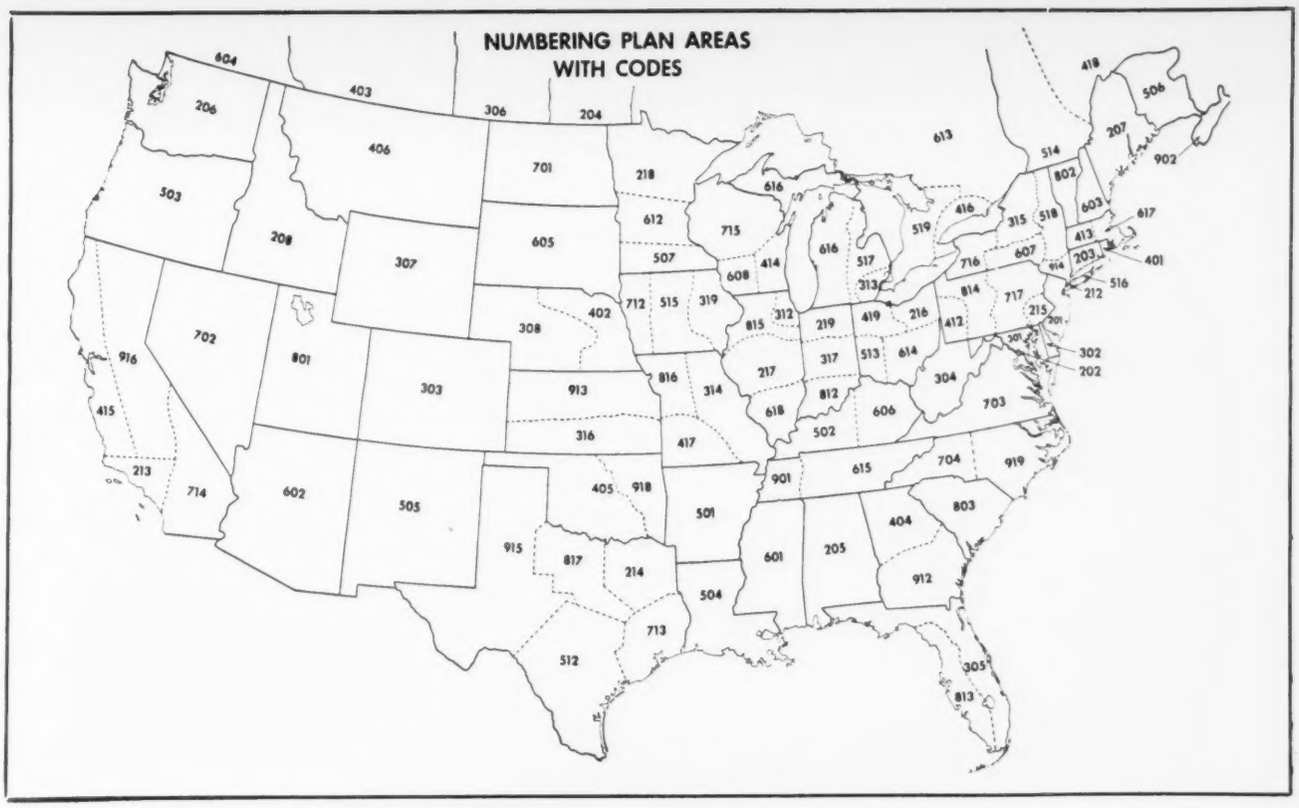
The Chamber has published a series of 17 booklets entitled "The American Competitive Enterprise Economy." These booklets are recommended for use in a group, meeting once a week for 17 weeks, with each booklet being the subject of one lesson. After completing this group study course, then attending the classes at the University of Michigan, I had a very graphic demonstration of the advantages of studying under a professional teacher.

Although I recommend the study of the booklets prepared by the Chamber if no other source of instruction is available, I can state very positively that the 12 hours of classroom work at the University of Michigan devoted to economics was far more profitable and instructive to me than the 17 lessons of group study during the previous winter.

Sixth, I wondered if the entire program would be worth the cost to my company. The cost in dollars is not small, considering not only the tuition, but also the transportation costs and the loss of productive work while the employe is in school. I can say without reservation that I am now fully convinced that a program of training such as the one I have completed is well worth the cost.

A program of training executives on the job, over a period of years, is also expensive, and many smaller companies simply do not have any facilities for such training. I know that almost every utility has executives to be trained for advancement, and on the basis of my experience this summer I feel that consideration should be given to training these executives at one of the management courses now available at a recognized college or university.—***Earle Blomeyer.***

"But, dear, I told you not to visit me during working hours!"



The Independent Company and Nationwide Toll Dialing

By L. A. HODSON

PART III of Mr. Hodson's article discusses — (1) Equipment, continued from Part II of this article; (2) testing facilities; (3) trunk provision. Part II of this article appeared in the October TELEPHONE ENGINEER & MANAGEMENT.

Equipment (Continued)

TONES AND FLASHES required by nationwide toll dialing in class 4 and 5 offices are as follows:—

High Tone — 400 or 500 C.P.S. This tone is used for coin return and office identification.

Low Tone — 600 C.P.S. modulated by 120 or 130 C.P.S. This is used for dial, line busy, paths busy, re-order and coin collect tones.

Audible Ring — 420 C.P.S. modulated by 40 C.P.S.

Line Busy — 60 I. P. M. tone and flash.

.5 sec. tone on, .5 sec. tone off. .5 sec. flash off, .5 sec. flash on.

Re-order — 120 I.P.M. tone and flash.

Local — .3 sec. tone on, .2 sec. tone off.

Toll — .2 sec. tone on, .3 sec. tone off.

.2 sec. flash off, .3 sec. flash on.

All selectors to which incoming toll calls have access should be arranged to return the appropriate tones and flashes.

Certain types of trunk circuits employing single frequency in band signalling systems will not pass tones. To meet the needs of direct distance dialing, tone appliers should be provided on the originating ends of these circuits to provide audible tones in the intervals between flashes.

In class 4 offices, arrangements should be made to give distant operators access to special service operators. Standard operator codes are:

121 Inward
131 Information
141 Route
181 Toll Stations
191 Transfer to C.L.R.
11XX) Delayed Call
)
11XXX)

Distant operators will gain access to operator codes either by plugging into a trunk to the class 4 office in the toll switchboard multiple, or by dialing the T.T.C., code followed by the operator code, through a class 3 or higher class of office. In the latter case the T.T.C. code will be absorbed

by the equipment in the control switching point and only the operator code will be sent forward.

Figure VII shows a typical arrangement for operator codes. It will be seen that in the case of operator codes in the form IXI the trunk termination is reached on the second digit, leaving the last digit ineffective. The trunk termination should be arranged to absorb this last digit before signalling the operator, so that a fast answer by the operator will not block the sender in the distant office by returning "off hook" supervision before the last digit has been sent. Inward (121) trunks should be arranged to receive ring forward and to ring back. All operator trunks should return audible ring.

Toll switchboards should have the following facilities:

(a) Ring forward and ringback over intertoll trunks.

(b) Dial on both front and rear cords. "Start dial" lamps should be provided to operate to a "start dial" signal.

(c) Receive switchhook supervision on both front and rear cords.

(d) Hold C.L.R. trunks if originating subscriber hangs up.

Testing Facilities

In class 4 offices access should be provided to test line codes, as shown in *Figure VII*. The standard test line codes, and the terminating test facilities required, are as follows:

(a) 100 — connects to a termination for balance and noise testing of intertoll trunks. The termination provides:
  (i) 'off hook' supervision to the calling end as long as the circuit is held by calling end.
  (ii) A suitable terminating impedance.

(b) 101 — provides a communication line to the toll test board.

(c) 102 — connects to a 1000 cycle one milliwatt power source for one way transmission testing of intertoll trunks. The termination will:
  (i) Return an 'off hook' signal when testing power is connected.
  (ii) Remove testing power and return an 'on hook' condition after 10 seconds.
  (iii) Provide an idle circuit termination in 'on hook' condition.

(d) 103 — connects to a termination for signalling and supervision tests. The termination will, in sequence:
  (i) Return an 'off hook' signal when seized.
  (ii) Return an 'on hook' signal on receipt of a re-ring signal.
  (iii) Return 120 I.P.M. flash on receipt of a second re-ring signal.

(3) 104 — connects to a termination which gives a two way transmission test and a one one way noise test. The extent of application of this test is not yet determined. Where this test termination is provided it will:
  (a) Provide for normal terminal pad arrangement under measuring condition.
  (b) Receive and measure 1000 cycle 1 milliwatt minus circuit loss.
  (c) Arrange a network to simulate the loss measured under (b).
  (d) Send 1000 cycle 1 milliwatt towards the testing end.
  (e) After a timed interval send 1000 cycle 1 milliwatt through a loss equal to that measured in (b). If the loss in (b) exceeds 10 db., the sending level is raised 10 db., and an appropriate signal is sent to the testing end to indicate this condition.
  (f) Check the noise from test location to the termination against pre-set limits.

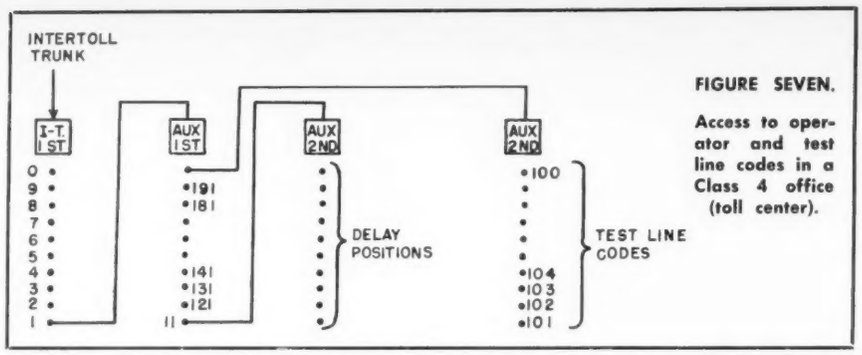


FIGURE SEVEN.

Access to operator and test line codes in a Class 4 office (toll center).

In addition to the standard test line terminations other terminating, testing and patching facilities should be provided in class 4 offices to meet the needs of the circuits, signalling and switching equipment employed. Consideration should be given to providing the following types:

(a) *Primary toll test board* — usually provides four jacks per circuit for terminating, testing, and patching physical lines. Should be equipped with test and talk cords, voltmeter, Wheatstone bridge and test battery, either in an associated or portable unit.

(b) *Secondary toll test board* — Provides test and busy jacks for each circuit and is equipped with facilities for monitoring, talking, transmission measuring, signalling and miscellaneous tests.

(c) *Patching Jack Bays* — Provide:
  (i) Two jacks per circuit for testing and patching the transmission path between the trunk relay equipment and the toll terminal equipment.
  (ii) Two jacks per circuit for testing and patching the signalling and dialing path (E and M leads) between the signalling equipment and the trunk relay equipment.
  (iii) Two jacks per circuit to patch the A and B leads, where required by signalling systems which use two additional leads to conduct the D.C. supervisory signal from the trunk relay equipment o the signalling equipment.

(iv) A monitoring jack, which is a multiple of the drop patching jack, for switching systems in which the test multiple is cut off on incoming and through calls.

Where the local Bell Company owns the toll circuits, it will provide the test facilities. Where the Independent Company owns the toll circuits the testing and patching facilities outlined in paragraphs (a), (b), and (c) may be concentrated on one toll test board where requirements permit. In the smaller class 4 offices they may be made part of a combined local and toll test board. The advice of the local Bell System Company, and of the equipment manufacturers, should be sought as to the best way to provide the test facilities required at the least possible cost.

(d) Test points on SF and CX units.

(e) Pulse repeating test set for CX, to be used to pulse over CX signalling paths and measure pulse speed and % break.

(f) Pulse generating and measuring test set for carrier systems, to be used to measure pulse speed and % break.

(g) Central test and make busy facilities for toll connecting trunks, as required.

(h) Carrier test facilities.

Again where the local Bell Company owns the toll circuits it will provide the test facilities. Where the Independent Company owns the toll circuits the advice of the equipment manufacturer should be sought as to the best means of meeting requirements (d) through (h).

(i) "Make busy" facilities in the operating room for the use of traffic personnel.

(j) Switching equipment maintenance test sets, as required by the switch system employed.

In class 5 offices jack fields for use with portable testing equipment, and test points on the CX equipment units, are required to test the toll connecting trunks. Switching equipment maintenance test sets should be provided as required by the switching equipment employed.

Access should be given to test line terminations by subscriber type numbers. For each type of test line the last four digits of the access number should be the same in all class 5 offices which home on the same toll center. The standard test line terminations are as follows:

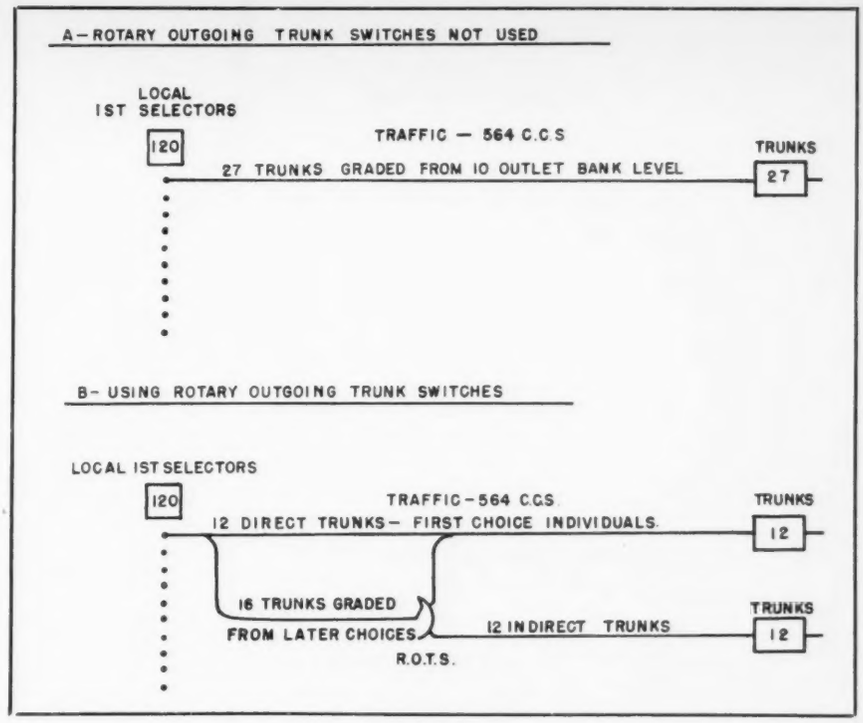


FIGURE EIGHT.

(a) A termination connected to a 1000 cycle one milliwatt power source for one way transmission testing. The termination provides the following facilities:

(i) Trips machine ringing.

(ii) Returns an 'on hook' condition to the calling end as long as the connection is held.

(iii) Connects testing power for nine seconds and disconnects power for one second. This cycle is repeated as long as the connection is held.

(iv) Provides an idle circuit termination ('on hook' condition) during the one second that the testing power is disconnected.

(b) A termination for noise and balance tests of repeatered trunks and trunks provided over carrier channels, where required. The termination provides the following facilities:

(i) Trips machine ringing.

(ii) Returns an 'on hook' condition as long as the circuit is held.

(iii) Provides a termination which, at 1000 cycles, simulates the impedance of a subscriber's line.

(c) A termination to provide the following non-synchronous test facilities.

(1) Starts to function under control of the ringing signal.

(2) Returns audible ringing for a minimum of 0.5 seconds.

(3) Trips ringing.

(4) After ringing is tripped returns 60 I.P.M. line busy signal.

It will be noted that, contrary to the test lines in class 4 offices, which return an 'off hook' condition to the calling end, the test lines in class 5 offices return an 'on hook' condition. This is to prevent false charging if the subscriber type test line numbers are called in error.

An identification test line should also be provided in class 5 offices. In this case the subscriber type number used should be different in each class 5 office homing on the same toll center. The identification termination provides the following facilities.

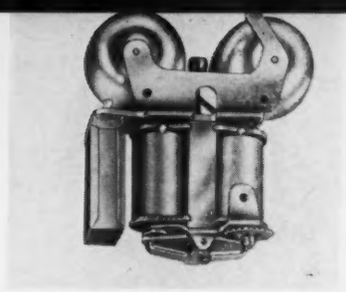
(i) Trips machine ringing.

(ii) Removes the tripping circuit to prevent the return of 'off hook' supervision to the calling end.

(iii) Returns high tone to the calling end for identification.

The testing and maintenance requirements may appear to be considerable, but it must be remembered

Type 80 ringers sound off loud and clear, even at the highest ringing frequencies. Here's your guide for fewer lost calls, less lost revenue—and an end to many, many ringing complaints.



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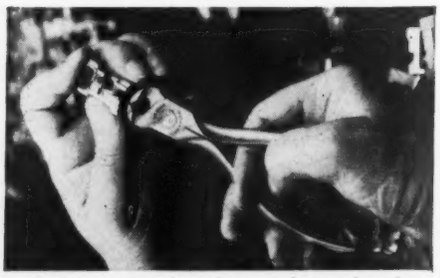
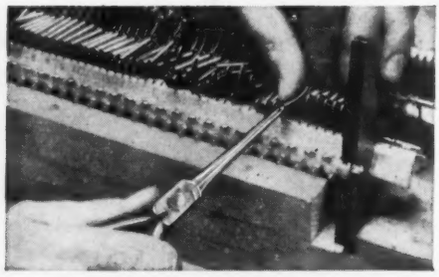
HIGH QUALITY"
say production engineers
at Smith-Corona Inc.

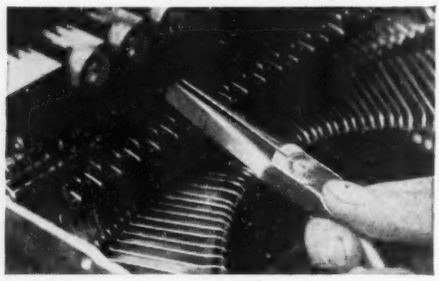
"In manufacturing a quality typewriter we need durability, dependability and accuracy in our hand tools, and that is what we get from Utica," they add.



A precut stepping dog carrier spring is trimmed to size by UTICA® No. 65 nippers.



A very popular tool at Smith-Corona is the UTICA® No. 777 needle nose pliers.



Bell crank link is snapped to key lever by UTICA® No. B224 duck bill pliers.

Smith-Corona's new Eighty-Eight secretarial office typewriter. UTICA TOOLS® have an essential part in producing this fine instrument.

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that trouble detection will be more difficult with nationwide customer toll dialing, as operators will no longer supervise the connections which are established, and that alternate routing will render the identification of faulty circuits more difficult. In the higher classes of office automatic test and trouble reporting devices will be employed which may not be justified in class 4 and class 5 offices. In these classes of office, therefore, it is evident that close supervision of the correct functioning of the switching equipment and maintenance of signalling and transmission standards will be essential.

The rapid switching and automatic alternate routing facilities provided by the switching plan enable traffic to be concentrated into larger and more efficient groups which form the basic network of final routes. Direct circuits which are not in the basic network are known as high usage routes, and are provided only when they can carry the traffic more economically than the final routes.

Within the scope of this article the types of trunks circuits to be provided are:

(1) Final route from a class 4 office to its home office (class 3 or higher).
(2) Toll connecting trunks from a class 5 office to its home class 4 office.
(3) High usage routes from a class 4 office to directly connected offices in class 4 or higher.

Circuits in the final route from a class 4 office to its home office should be provided to give a grade of service of 3 lost calls in 100 in the busy hour. The grade of service for the toll connecting trunks between a class 5 office and its home class 4 office should be not worse than 5 lost calls in 100, a grade of service of 3 lost calls in 100 being recommended. Where the class 5 office is in the same building or the same city as the class 4 office, a grade of service of 1 lost call in 100 in the busy hour should be given. The spread in the recommended grades of service for toll connecting trunks, between .01 and .05, is designed to make allowance for the wide variations in length and cost of this class of circuit.

The basis of provision of circuits in high usage routes will depend on the circumstances in which they are used. If used for operator toll dialing only, so that if all circuits in the high usage route are busy the operator will complete the call over the final route, or for direct distance dialing with automatic alternate routing facilities in the class 4 office, which will perform the same testing and selecting functions as the operator automatically, the number of circuits in the high usage route will be dependent on the ratio between the cost of circuits in the high usage route and the cost of circuits in the final route. The method of calculating the number of trunks to be provided in the high usage route is explained in an article "Traffic Engineering Techniques for Determining Trunk Requirements in Alternate Routing Trunk Networks" by C. J. Truitt, which appeared in the Bell System Technical Journal for March 1954, but unless the reader is familiar with traffic engineering techniques he should consult the local Bell System Company on this matter. If the high usage route is used for direct distance dialing, without automatic routing facilities at the class 4 office, any calls which cannot be completed over the high usage route at the first attempt will be lost, so that sufficient circuits should be provided to give a grade of service satisfactory to the subscribers, at an economic cost to the telephone company.

Where the number of circuits in a group of toll trunks is greater than the availability provided by the selectors used to gain access to it, consideration should be given to the use of rotary outgoing trunk switches to increase the availability, and reduce the number of trunks required.

For example, if the traffic offered to a group is 564 CCS and the grade of service is to be 3 lost calls in 100, the number of trunks required under full availability conditions is 24. If access is gained to the group by step by step type switches with an availability of 10 contacts per level, the number of trunks required to give the same grade of service will be 27.

If, however, rotary outgoing trunk switches are interposed between the selector levels and the trunk terminations to increase the availability of the trunks to 25, that is full availability to a group of 24 trunks, the number of trunks required is again only 24. The number of rotary outgoing trunk switches required in this case would be 16, so that three trunk circuits will have been saved for the

cost of sixteen rotary switches with their associated equipment and cabling. *Figure VIII* shows the trunking arrangements for this example. In a particular case the decision to provide rotary outgoing trunk switches, or not, will depend on the relationship between the cost of the switches and the cost of the trunk circuits they save.—(*To Be Continued.*)

The permission of the American Telephone & Telegraph Company to use material from the "Notes on Nationwide Dialing" is gratefully acknowledged.

Rochester Tel. Corp. Makes Stock Offering

ROCHESTER (N. Y.) Telephone Corp. common stock owners are being issued warrants to subscribe at $18 per share for a total of 195,312 shares of the company's common stock on the basis of one share for each four held as of Oct. 6. The subscription offer expired Oct. 24.

Proceeds from the sale of additional common stock will be applied to payment of $3,200,000 bank notes incurred previously to finance expansion of the utility's telephone service and to continue its dial conversion program. The company has estimated that $8,385,000 will be required for these purposes in 1955 and about the same amount in 1956.

Southern Continental Rate Reduction Ordered

CHAIRMAN John C. Hammer of the Tennessee Public Service Commission announced last month that as a result of the state Supreme Court's decision reversing a decree of the Davidson County Chancery Court, approximately 10,000 subscribers of Southern Continental Telephone Co. will receive rate reductions and refunds of higher rates paid since June 16, 1954.

A lower court had reversed the commission's April 15, 1954, order granting one-third, or $50,000 of the company's rate increase application.

IRE Technical Conference Scheduled for April 11-13

THE 1956 IRE 7th Region Technical Conference will be held in Salt Lake City, Utah, on April 11, 12 and 13, 1956. Guest hotel will be the Hotel Utah in downtown Salt Lake City. Professor O. C. Haycock is chairman of the convention.

FREE LITERATURE

"When Power Fails"

(Check 224 on Reader's Service Card)

PUBLIC SERVICES, cities and industry cannot afford the loss and danger following electric power failure caused by storms, mechanical breakdown, or enemy actions. "When Power Fails," a publication recently released by Catepillar Tractor Co., tells how to forestall disaster by installing standby power units now.

This eight-page booklet (D544) is illustrated with photographs of a few of the many and diverse installations using Cat Diesel Electric Sets for standby power.

Testimonials from engineers and officials attest to the dependability of Caterpillar generators — furnishing standby power for Oak Ridge atomic plant and hospitals, municipal waterworks, hatcheries, etc.

Pole Line Hardware

(Check 225 on Reader's Service Card)

THE HUNDREDS of products made by Hubbard & Co. are described and illustrated in a large new catalog. Standard pole line hardware and electrical specialties for communication line and power line construction are covered, and are carefully indexed. Tables of weights, measures, and material properties are included in the catalog, which contains 260 pages, with an embossed cover.

Shelving

(Check 226 on Reader's Service Card)

Catalog from *Precision Equipment Co.* describes steel shelving, lockers, and other storage and maintenance equipment for industrial and institutional use. This new catalog continues to feature, in the tradition of previous Precision catalogs, the work of nationally famous cartoonists. The new catalog also contains the popular joke column entitled, "Heard in the Locker Room," which adds sparkle to Precision catalogs.

Alphabetical Tabulator

(Check 227 on Reader's Service Card)

THE REMINGTON RAND Alphabetical Tabulator for translating punched-card data into printed form with totals as needed, is described in a new 6-page illustrated folder (TM-933) recently released.

A simple, money-saving answer to many business problems, printed data is speedily, accurately and economically prepared from punched-cards for job costs, machine loading schedules, aged trial balance, sales by product and class, invoices, payroll checks and statements, accounts payable voucher-check, etc.

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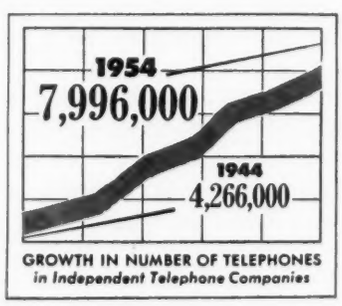

GROWTH IN NUMBER OF TELEPHONES
in Independent Telephone Companies

INDEPENDENT

Independent Telephone Companies of America

United States Independent Telephone Association • Pennsylvania Building • Washington, D.C.

PLANTER OF SEED

BY Thomas Hart Benton

Thanks to the telephone, there's one farmer who will get his seed planter repaired in time to start making a cash crop.

Getting needed service is only one of the many benefits the telephone brings to any farmer. And the Telephone Directory plants seeds for more efficient work and more comfortable living.

If your company serves rural subscribers, take a look at your present Telephone Directory. Does it give a farmer *all* the information he wants in the Yellow Pages? Could improvements be made with the problems of the farmer in mind?

One of our representatives can be helpful to you in answering these questions. For the Loomis Advertising Company is retained by many companies that successfully serve rural areas.

It is Loomis' business to build bigger and better directories, tailored to meet the needs of the communities they serve. The result, in every case, is more net revenue for the telephone company.

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Section II

USITA Commercial Conference Report...

"Let's Sell Our Service"

POINTING OUT that "present sales methods are failing to reach the same competitive level as those employed by our rivals," K. L. Schroeder, executive assistant to the president, Telephone Services, Inc., Chicago, made the following recommendations: —

(1) All employes having anything to do with the sale of service should be given some form of training or coaching in salesmanship to better equip them to intelligently present a sales talk that is geared to the customers needs, and one that will produce good results.

(2) Such training is not lengthy or difficult. Actually the entire sales program can be built upon the knowledge and use of the answers to two questions: (a) How are sales made? and (b) Why do prospects buy?

"The steps in making a sale," he said, "and the order in which they must be taken are applied common sense: (1) Gain the prospect's attention; (2) develop his interest; (3) stimulate his desire; and (4) convince him to act."

Mr. Schroeder emphasized that before approaching the customer, a plan should be made covering these four steps.

"Keep in mind that all creations of man began with a thought or idea, and it stands to reason that we must therefore have the power to create a market for a product or service," he said. "A thorough knowledge of the service you are selling and of the prospect on whom you are calling are prerequisites to selling. This knowledge will enable the salesman to present a sales interview in a friendly, personal way that will gain and hold the prospect's interest. By means of planting ideas in the prospect's mind, you convey to him the full value of the service you are selling and lead him to the conclusion that he will gain by buying and lose if he does not buy. In selling telephone service try to present a word picture that will show the prospect how the service will improve his wealth, contribute to his welfare, add to his peace of mind or enrich his happiness."

Taking up the question "Why do prospects buy?" Mr. Schroeder stated a prospect buys because of one or more of the following reasons: (1) He buys because he needs it; (2) he buys because he can use it; (3) he buys because it will add to his wealth or help him create wealth; (4) he buys because it will satisfy his vanity; and (5) he buys because it will satisfy his security.

Analyzing these five reasons from the viewpoint of the telephone, Mr. Schroeder concluded: —

"(1) Under the classification of things the prospect needs will be found, basically, food, clothing and shelter but also many other things. Telephone service may fall in this basic category from the viewpoint of some prospects. We probably can attribute most of our walk-in sales to people who need our service. On the other hand if you plan to explore this field for additional sales it would be well to stress the utilitarian angle rather than the beauty or convenience of the service. Impress upon the prospect, the usefulness, dependability and low cost of the service, and convince him that he cannot afford to be without your service. Selling a person with impaired hearing an extension bell or a hard-of-hearing telephone, or selling a business man a P.A.B.X. service when his business has expanded to warrant such service should not be too difficult.

"(2) The customer also buys because he can use the product or service as an aid to living, and in this field are a host of items, TV sets, automobiles, books, refrigerators and washing machines, to name a few. Here the prospect is buying because it will add to his enjoyment, his health and his happiness as well as that of his family. A sales pitch designed to sell the telephone as a means with which to add to the prospect's comfort, leisure, edification and safety should ring the cash register here. Here is the area, I believe, where our rivals for the customer's dollar are beating us to the draw. It is here that we should devote our best talents toward selling and this is the place to bring the whole family into the picture, because telephone service will benefit everyone.

"(3) Falling in the third group, those who buy to add to their wealth or to create wealth, we find such items as stocks, bonds and insurance as well as the machines and tools used in business and industry. Your dealings with this customer will for the most part, be confined to business people. Regardless of whether the business is large or small, we have a valuable and useful service to fill the needs. The best method of selling this prospect is to survey his business establishment and offer a personalized service designed to improve his communication system, while at the same time providing substantial savings or improvements for his business.

"(4) Among the items purchased by the prospect to satisfy his vanity will be found clothing, jewelry, convertibles, colored bathroom and kitchen fixtures and colored handsets. I have placed clothing in this class for the second time for even though a man must have clothes there is the difference between need and vanity that causes him to buy a $125 suit instead of a pair of overalls. Put on

**Part One of this report appeared in the October "Telephone Engineer & Management."*

your best selling manners and give vent to showmanship when you launch out in quest of colored handset sales and some of the other gadgetry of telephony. There are many opportunities for sales in this field, however, and it is not difficult to convince Mrs. Brown that she should keep up with Mrs. Jones.

"(5) The last group of buyers are those who buy to satisfy their security. For this reason people buy life insurance and it is also the reason that many salesmen are making a living selling cemetery lots. It is here that we can sell extension telephones to provide more security and aid the customer in summoning a policeman, the fire department or a doctor. Here, also, the prospect is concerned with the welfare, happiness and peace of mind of his family. In dealing with this prospect the emphasis should be placed on what the service will do for the customer and the enjoyment, satisfaction, and high degree of safety it will afford him . . ."

Business Office Service of Hawaiian Telephone Co.

WILLIAM C. KEA, commercial manager of the Hawaiian Telephone Co., Honolulu, introduced his commercial conference address by showing slides which familiarized his audience with conditions under which Hawaiian Telephone Co. provides service.

Discussing two important managerial aspects of business office operations in Honolulu — volume measurements and service measurements — Mr. Kea explained that the work volume measurement plan measures the relative volume of work handled from month to month in a given group.

"From this information," he said, "the number of people required to do a good job can be determined. The service measurement plan measures the quality of the job being done in meeting the public face-to-face, by telephone or through correspondence."

Reviewing the Hawaiian Telephone Co.'s experience with the plan, Mr. Kea stated the costs were not excessive — approximately 1½ per cent of the total Account 640 and Account 645 expense.

"In our opinon," he said, "the benefits far outweighed this expense."

Explaining how the measurements are taken, Mr. Kea referred to the service representative's job.

"Her work," he said, "consists of numerous tasks which repeat themselves many times in the course of a day or week or month. The representative has bill stubs and orders to post, she has collection steps to take, she handles customer contacts, many involving service orders. Each of these work items can be assigned an average time required in performance. This average time might be considered par. To obtain an overall estimate or theoretical time required to do the total job, we count the number of work items and multiply the totals by the average time required for each item. It is then possible to compare the total theoretical time with the actual time required to do the job, and from this, conclusions may be drawn as to performance.

"Let's say the actual time agrees or comes close to the theoretical time. It can then be assumed that the work force is adequate. But if the actual hours far exceed the theoretical time required, it is a good indication that something is wrong with the work force. It may be necessary to reduce the size of the group or expand certain items of work so as to do a more thorough job.

"On the other hand it may be found that the actual hours are far less than the theoretical hours, — again something is wrong. Probably too little time is being provided to do a good job. However, this seeming efficiency may be hurting the quality of service."

Emphasizing that some forms and a bit of know-how are needed, Mr. Kea commented that after a few months the plan falls in place.

"The work volume reports," he said, "are particularly helpful in determining the size of a basic force, and since payroll expense is a major portion of operating costs, it behooves us to have a sound basis for knowing the number of people required to do a good job. From these reports we have learned to program vacations, changes in routines, training and special work projects such as sales canvasses, and, we can proceed with reasonable assurance that these things can be carried out without adversely affecting the all important service job. The work force can also be geared to anticipate seasonal variations in work load and special events such as directory closings and rate changes."

Discussing service measurements,

Thompson Field Research, the most extensive in the industry, now tells you the best way to destroy all mixed brush and hardwood growth during the dormant season . . . effectively . . . economically.

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Write for Research Station Papers No. 19 and 21, mentioning type of brush to be controlled and number of miles of right-of-way involved. Favorable utility chemical prices submitted on request.

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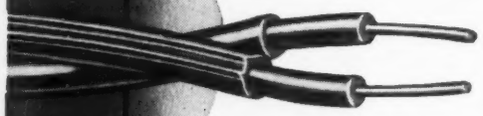

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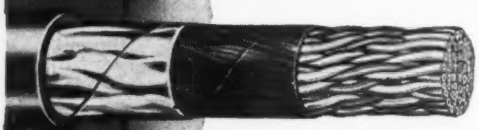

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Mr. Kea stated that these measurements require an accurate sampling of customer contacts by a service observer.

"In our company," he said, "this sample amounts to an average of 340 contacts per month, which is approximately 1½ per cent of the total. This sampling involves monitoring of telephone and public office contacts and a review of correspondence. All of these items are measured on the basis of their accuracy, their completeness and promptness of handling.

"If our people are making promises which they fail to keep, this is scored. If customers are kept waiting too long before their calls are answered or if there is an excessive delay in obtaining information while the customer waits, this too is scored. We have found that the range of possible technical faults is wide. Shortly after we started observing the contacts handled by our service representatives, we were amazed at the many things they were doing wrong."

Mr. Kea reported that in addition to observing the technical aspects of a contact, the Hawaiian Telephone Co. also attempts to grade the manner in which a representative expresses herself.

"We determine," he said, "whether or not her expressions convey a willingness to do everything possible to satisfy a customer's request — whether or not the expressions are appropriate and indicate interest and helpfulness. This phase of service measurement is referred to as Overtones. In developing Overtones among our people, we have found it necessary to guard against a false tone which sounded 'syrupy' and therefore unnatural. We try to develop in our people expressions which are natural and sincere.

"From our observations, we compute the percentages of faults related to the total number of contacts in the sample. Then, by relating the percentage of faults to tables prepared in advance, we obtain a service index. Points are gained by keeping percentages of faults low. The technical and Overtone service indices then become an important guide as to the quality of the job being accomplished.

"From the results of this phase of our measurements we have a basis for adjusting our training, our methods or our supervision to meet ser-

vice objectives. For example, suppose we find that service representatives are misquoting certain rates or are not adequately explaining certain company policies. We then give special training covering these items."

Mr. Kea stated that in the Honolulu office the company has one full time service observer who takes a sample from some 20,000 customer contacts each month.

"I realize," he said, "that many business offices in the industry are smaller than our Honolulu Office and that the expense of having a full time observer would not be justified. We have this problem in our offices on all of the islands except Oahu. On these neighbor islands we have from two to five service representatives. Based on our experience in Honolulu we have decided that some form of observing is desirable even in these areas and we are planning to have an observer visit the outlying offices periodically in addition to having spot checks made by the local supervisors. Here on the mainland some of you may want to consider combining forces and having one observer cover an area served by two or more companies.

"After four years of quantitative and qualitative measurements in Honolulu, we believe we are doing a more effective job than we would have done had we not had these measurement plans. Through the work volume measurement plan we think we have kept our force at a minimum and by means of service observing we feel certain that we have improved our public relations.

"We believe that everyone benefits from these measurement plans.

"*The Customer* — by providing him with better service.

"*The Individual Service Representative* — by developing a sense of public responsibility and pride in her job.

"*The Business Office Team*—by keeping it informed of the quality of its work and the trend of its performance.

"*The Company* — by knowing what kind of a job we are doing and pointing the way to improvements through better methods, better training and more effective supervision."

Complete copies of papers reviewed in this issue may be obtained from USITA's Washington office.

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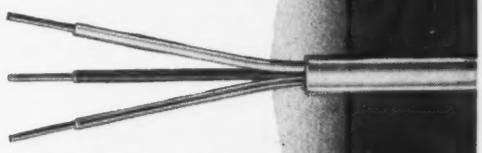

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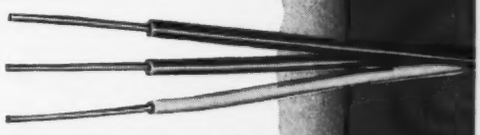

Distributing Frame, Jumper and Duct Wire. Semi-rigid Plastite type; also nylon jacketed type for extra protection; enameled, cellulose acetate and cotton covered type. All built to Whitney Blake's high standard of quality.

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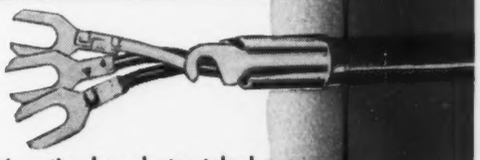

The neoprene-jacketed, long-lasting, tinsel-conductor telephone cord that resists abrasion, perspiration, humidity, oil and grease.

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WHITNEY BLAKE COMPANY

New Haven 14, Connecticut

Ocala, Fla. toll office of the Florida Tel. Corp.

A Practical Guide For Training Traffic Employes

By RUTH E. RICHARDS

IN PART VI of her article, Miss Richards discusses movement of traffic — answering signals, subsequent attempts and congestion of traffic. Part V of this article appeared in the September issue of "Telephone Engineer & Management."

"Teaching is not filling a bucket — it is lighting a lamp."

ONE OF THE most important duties of a supervisor is to secure prompt answers to all signals, including recording, toll line, TX and other interposition signals. and cord signals. In watching the handling of traffic at CLR and TX positions, she must be aware that:

(1) A prompt answer to recording signals is especially necessary to insure that calls of an urgent nature are quickly identified and speedily handled.

(2) Prompt answers on toll circuits and position trunks are important to produce the most effective use of other operators' time, circuits and positions.

(3) Prompt answers on cord signals are required because further action may be necessary on a call or further service given to another operator.

The supervisor should direct her CLR and TX (delayed call) operators to assist each other in answering signals. If TX signals are waiting, adjacent CLR operators should generally team with TX in answering them before recording other calls. If recording signals are waiting, delayed call operators should generally assist in answering them in preference to making attempts on delayed calls.

Make every effort to dispose of each call on the initial attempt. (A revised practice which limits subse-

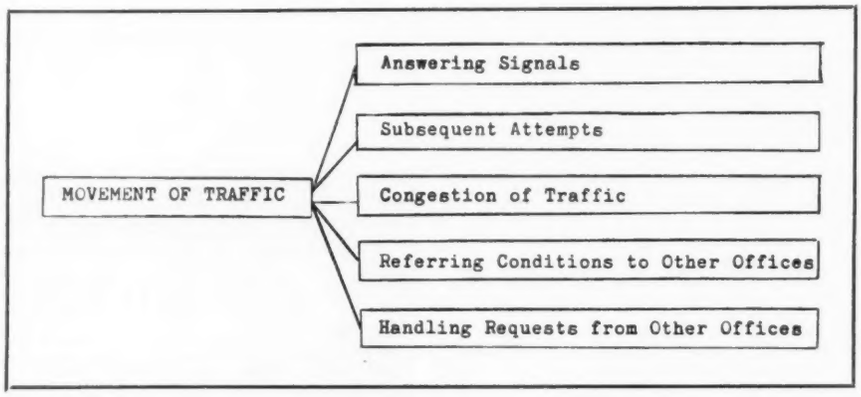


FIGURE SIX.

quent attempts, issued for use on a tentative basis by some operating companies, eliminates much of the work at TX positions and speeds call handling. We recommend the adoption of this practice for the handling of "By" and "Da" conditions, if the instructions are provided for your office T.O.P.)

In the lesson discussion, the instructor should emphasize the importance of watching for factors which contribute to slow CLR service such as:

- slow rate and route service — slow information service (own office)
- "nc" conditions on auxiliary service trunks
- slow answers on toll switching trunks or answers from other offices.

If "no circuit" conditions exist, the supervisor should know what circuit groups are involved, the number of calls being held due to delay, and take action to post delays if necessary. If delays are posted, make certain that customers are advised when their calls are taken.

Delayed Call Handling

IT IS IMPORTANT that customers be kept informed as to when it is expected that their calls will be tried.

It is the supervisor's responsibility to be sure that her operators are familiar with the subsequent attempt schedule and that attempts are made when the customer expects, based upon previous reports of party delay or circuit conditions.

If heavy traffic is causing attempts to be overdue, tickets may be temporarily diverted to a CLR operator for handling.

Make certain that operators are securing the calling line before starting to work on calls, and that they are checking the availability of the calling party in all cases when 30 minutes or more have elapsed since the last report was given to or received from the calling telephone.

If delayed call work is properly organized and moving smoothly, the results will show up in effective use of operator's time, and circuit time; tickets will be located promptly, and attempts will be made when due.

Information Service

FIRST OF ALL, let us establish in our minds the fact that Informa-

Please Turn To Page 78

LOWELL WIRES GET THE CALL THROUGH

The technical staff at Lowell Insulated Wire Company uses many physical tests to determine the effect of heat, aging, tensile strength, compression, cold, acids, oils, moisture and abrasion. They also employ extensive electrical tests. To create the maximum performance and dependability which is characteristic of Lowell Insulated Wire, many factors have been combined in a well balanced and efficient manufacturing process. That is why through long years in actual service Lowell Wires maintain a record for reliability and low maintenance or replacement costs. Write today for details.

"FINE WIRES ONLY"

DROP WIRE — neoprene jacketed, rubber insulated — between buildings and open wire telephone line.

BRIDLE WIRE — neoprene jacketed —link between drop and inside wires.

DUCT WIRE — plastic insulated — used inside buildings for connecting outside circuits to station sets.

LOWELL INSULATED WIRE DIVISION
of The Overlakes Corporation
171 LINCOLN STREET ··· LOWELL, MASSACHUSETTS

Neoprene Jacketed, Rubber Insulated Drop Wire, with Bronze, Copperweld or Copper conductors, Brass flashed or tinned — Neoprene Jacketed Outside Distributing Wire — Tree Wire — Plastic Insulated Inside and Duct Wire — Jumper and Distributing Frame Wire — Glazed Braided Inside Wire.

Additional telephones

MEAN SAFER HOMES, TOO

Safety in the home is one of the basic needs a telephone fills. It's a good reason, too, for having additional telephones in convenient places.

The advertisement reproduced across the page appears in national women's magazines during November. Its purpose is to help increase use of the telephone by showing readers the many ways additional telephones can be of service to them.

We are happy to salute the new official emblem of the U. S. I. T. A.
This attractive design takes a place alongside the Blue Bell
as a symbol of good telephone service to the nation.

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Lots of mishaps don't happen

if telephones are located where they're needed

Telephones in kitchen, bedroom and around the house are not only step-savers—they're safety aids! You don't have to leave small children alone while you go elsewhere to answer or make a call. You get a *lot more* telephone service for only a few pennies a day for each additional telephone. Just call the business office of your local Bell telephone company.

BELL TELEPHONE SYSTEM

Reminding you that someone, somewhere, would enjoy hearing your voice today.

tion service is not a step-child of traffic operating, but an integral part of the family of services given to customers. This fact holds true regardless of whether it is overlapped with other services, such as Rate and Route, or handled at a separate position. In discussing the various phases of Information service, it is well to stress the primary objective of this service — to find the desired listing. Practices are established to further this aim, but the quality of Information service depends to a great degree upon the initiative, good judgment, and knowledge of the Information operator.

The Illinois Bell Telephone Company, in a recently issued revised Traffic Operating Practice, covering Information operator's work, has this to say about the principle of Information service: (partial quotation)

"SPEED OF SERVICE. Economy of operation and fast speed of service are essential, but are best accomplished by efficient operation rather than by rendering a more limited service. This involves well-trained operators, good switchboard arrangements, good records, effective use of frequently called number lists, and high development of memory calls. If fast service is given on the great bulk of calls which do not present difficulty, a longer search on the occasional difficult call is not of serious consequence. More important than limiting the search in obtaining fast speed of service is developing good search techniques — i.e., choosing the right record; knowing where to look; knowing when to stop looking; making use of personal knowledge; being free to suggest possible listings; developing ability to scan and skill in pronunciation and spelling. Having completed a search without finding the desired telephone, it is futile to re-search the same records, therefore, the report should be given promptly and confidently. There need be no hesitancy in giving an NF report if such is the case after having made a competent and adequate search.

"PERSONAL KNOWLEDGE. Information operators, in the course of time, acquire a large store of telephone numbers which they personally know, which are not on the frequently called number list, and in addition, they can remember a high proportion of the numbers on the list. The more numbers that operators can quote from memory the nearer the Information service approaches the objective of giving the customer the numbers they want in the shortest possible time."

Frequently Called Number List

ONE OF THE valuable assets in giving good and efficient Information service is a list of the more frequently called numbers, and of certain other very important numbers which are less frequently called. Such lists fall short of their true value, however, if not well designed and kept up to date, including numbers of temporary significance due to special events, authorized charity drives, etc. Numbers on the frequently called number list can be given with a minimum of questioning regarding branches or departments, with little if any search, and generally without qualification. The handling of such calls is essentially similar to memory calls, and the list may be considered in effect as an extension of the operator's memory.

Personal Service

AS LOCAL and toll calls become more and more mechanized, Information service becomes increasingly important in bringing telephone employes out from behind the scenes and continuing to render a personal service. For many customers, the Information operators may be almost the only personal contact which they have with telephone employes and, consequently, their judgment of the Telephone Company may be dependent almost wholly on the tone and manner of the Information service.

Therefore, it is important that Information operators be friendly and helpful, displaying personal interest, speaking naturally, using judgment and imagination in an effort to meet, within reason, the customer's wishes. It is important to realize that the customer is, above all trying to obtain a telephone number, and that the Information operator's function is to try to obtain it for him if it is at all reasonable to do so.

Therefore, there should be no hesitancy to offer other probable listings if the exact one requested is not found. Putting one's self in the place of the customer, it seems evident that he would prefer to be given the opportunity of trying some or more listings which might be right, rather than to be denied a listing because it might not be the one desired.

When a listing is not found, it is important that the operator's tone and manner convey her desire to help, her regret that it was not found, and a feeling of confidence that she has willingly and cheerfully done all that she could reasonably do.

Unlike other types of telephone service, Information is less confined to strict rules. The many variations in name spellings and pronunciation make each call different, as well as the manner in which requests are made and the way in which telephones are listed.

During practice periods the student supervisor should be reviewed on some of the more important features of the Information operator's work, which provide speedy, efficient and accurate handling of calls:

Signals answered as far as possible in the order of appearance.

Preference given to calls from Long Distance.

If both Information and intercepted calls are handled at the same position, that preference is given to an intercepted call.

That memoranda are written only when necessary.

That search is started at once — operator obtains sufficient details to permit an adequate search — and adheres to prescribed scope of search. (Note, see comments under "Limit of Search.")

That frequently called listings that do not appear on ready reference lists are referred to the supervisor as desirable additions to the list.

That any qualifying details that might make a difference in the report that is given are carefully noted, such as a branch office or department that has a separate listing.

That a definite report is given on one call before taking another.

That suggested listings are given where indefinite or incomplete details are offered by the customer.

LIMIT OF SEARCH: — The rules governing limitation of search — according to the operating practice — are based on experience which has proved the extent of search which is, in general, profitable. Local Company policy in this matter will, of course, be the actual controlling factor. Where indefinite or incomplete details have been given, fifty listings is

considered the limit of search, i.e., about half a column in a large directory. Urgent or emergency cases will be given attention without limits.

Practice Call Conditions for Student Supervisor — Outward Operating:

(1) *Calling party insists upon being connected with a busy line.*
   (a) Distant office reports WH.
   (b) Distant office reports number is OK.
   (c) Called party refuses to release line.

Reference: *T.O.P. Div. A, Sec.* 5, 11 *S. A.*

(2) *Calling time at end of specified period.*
   (a) Notification given before or at end of exact specified period not including timing allowance.
   (b) Notification late, calling party does not express unwillingness to accept the excess time.
   (c) Notification late, calling party expresses unwillingness to accept the excess time.
   (d) Notification not given before end of conversation.

Reference: *T.O.P. Div. A, Sec.* 8, 9*b S. A.*

(3) *Referring ticket to service assistant at end of conversation.*
   (a) Calculagraph stamp crooked, incomplete, or illegible.
   (b) Elapsed time consists of 2 or more timing intervals.
   (c) Elapsed time affected by service interruption or transmission difficulty.
   (d) Elapsed time exceeds 30 minutes.
   (e) End of timing entered on wrong ticket.
   (f) Conversation timed on a ticket marked "dup."
   (g) Customer claims he wanted a person call after it was completed as a station call.
   (h) Customer claims no satisfaction was obtained on a station call because an unauthorized person answered the telephone — or person who answered refused to talk.

MAYOR C. V. HIESTAND pulls switch which places new switchboard in service at Campbellsville, Ky. Watching (l. to r.) are: O'NEIL KIDD, G. A. KLEIN, and HOMER J. WRIGHT, all of Southern Continental Telephone Co. Equipment is housed in new air-conditioned building.

Reference: *T.O.P. Div. A, Sec.* 8, 11 *S.A.*

Practice Call Conditions for Student Supervisor — Information Service: —

(1) *Customer insists that desired party has a telephone after definite no listing report.*
   (a) Customer indicates that desired party has non-published telephone.
   (b) Customer insists on obtaining non-published number.

Action to be taken 1-*a*: Explain to the customer that you cannot give out a non-published number, saying, for example: "If they have a non-published number, I wouldn't have a record of it because they do not wish it given out."

Action to be taken 1-*b*: Secure the customer's name and number, if you do not know it, and tell him you will have the Chief Operator call him. Refer the call to the Chief Operator. Standard practice provides that a list of non-published numbers be kept at the Chief Operator's desk or other suitable place in the Traffic Department. Information concerning such numbers should be given out only to persons authorized to be given the information. Such authorization generally is extended to:

(1) Police and Fire Departments in connection with alarms from such telephones.
(2) To Telegraph Companies when verifying facts in connection with telegrams.
(3) Telephone supervisory personnel of a level equal to or higher than that of Chief Operator.

In cases of extreme emergency (illness, accident, death) or urgent calls from Long Distance, or where a customer *demands* to be connected to a non-published telephone, the Chief Operator should call the subscriber with the non-published number and ask if he desires to be connected with the calling customer, at the same time tell him that his number will not be given to the calling party. Be governed by his reply.

(1) *Customer indicates that he has previously been given wrong information.*
   (a) Report found to be correct on investigation.
   (b) Error in records found on investigation.

(2) *Customer requests information regarding a listing.*
   (a) Customer requests name and address on a telephone number.
   (b) Request received from an authorized government department.

Action to be taken 3-*a*: In most offices, numerical information service has been discontinued for general public usage. If the service is not available in your office, explain to the calling customer that you do not furnish such information.

Action to be taken 3-*b*: Although numerical service has been withdrawn from public usage, business office records or plant department records may be maintained and available to care for emergency cases or requests from authorized law enforcement agencies.

Next month we'll discuss the supervisor as a teacher.—***Ruth E. Richards.***

Automatic Private-Line Teletypewriter Switching Systems

By G. A. LOCKE and E. R. ROBINSON

JUST AS long-distance telephone calls must be routed and controlled by an integrated toll switching system, so must teletypewriter messages be routed and controlled by a central switching point. In the 81D1 private-line system, teletypewriter messages are picked up from stations all over the country and re-transmitted to their destination by a few strategically located switching centers. One important feature of the system is that temporarily undeliverable messages are stored at the switching center and then transmitted over the next link when it becomes free.

WITHIN THE past two decades, private-line teletypewriter networks supplied by the Bell System have assumed an increasingly active role in the conduct of modern business. Prior to 1940, teletypewrite messages had to be transferred manually between various lines that comprised these networks. In that year, however, the situation was changed when the Bell System introduced the first automatic message switching system for teletypewriter networks. That first system has undergone many improvements, especially since World War II, and from it has evolved the latest version — the 81D1 teletypewriter switching system.

These teletypewriter switching systems have many points of similarity with long-distance telephone switching systems, but there is one major difference. When a telephone call cannot be completed, because either all circuits to the called station are busy or the called station is busy, the caller disconnects and waits until a circuit is free. However, when a teletypewriter message cannot be delivered to its destination immediately, it must be stored somewhere along the way and later sent on in its original form when a path becomes free.

The 81D1 system not only stores and retransmits messages originating in any part of the system, but it also automatically transmits messages from the various stations as they become available, and delivers them

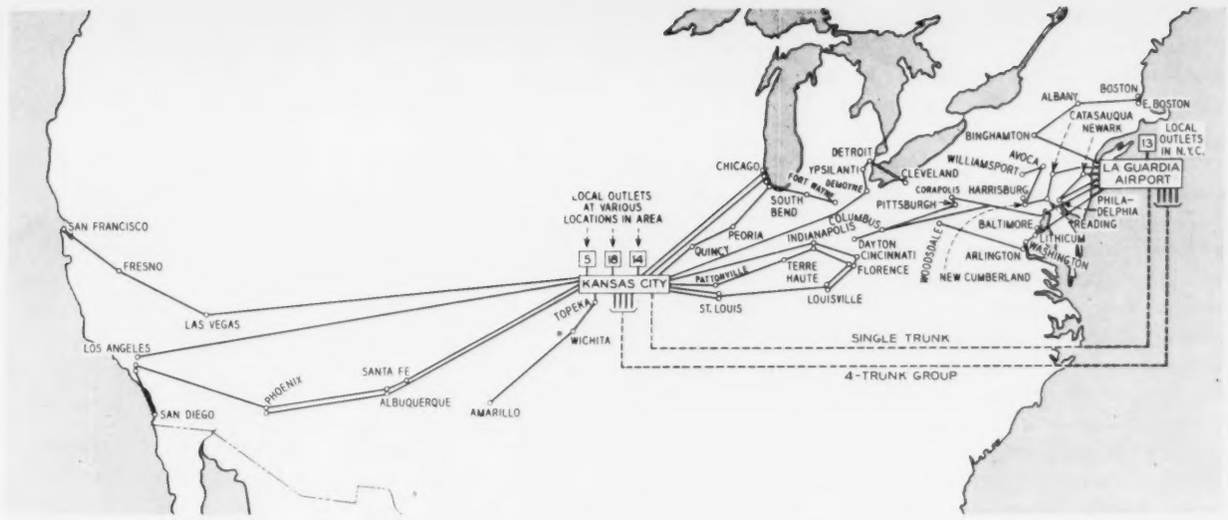


Fig. 1—The widespread network of Trans World Airlines teletypewriter stations is served by 81D1 switching centers at Kansas city and at La Guardia Airport in New York City.

only to the station or stations addressed. Urgent messages receive priority treatment. Messages addressed incorrectly, or to a machine temporarily out of service, are automatically intercepted and held for further handling. When several stations normally receive the same messages, they may all be reached by a single group code preceding a message. Further, when desired, an automatic address unit will properly address messages to selected stations or groups or stations simply by the operator pushing a button.

Typical Installation

A TYPICAL 81D1 installation is that serving Trans World Airlines, *Figure* 1. The illustration at the head of this article shows the switching center at La Guardia Airport. L. E. Oatman of TWA operates the control panel while the authors look on. Miss Jean M. Cooper, Lead Switching Center Operator is at the desk.

Two switching centers, one in New York and another in Kansas City, are connected together by four two-way trunk lines and one one-way trunk line. These centers control numerous stations across the country. All major switching operations for the network are concentrated in the two switching centers, the outlying stations having only a minimum of equipment. Each switching center consists of input equipment for all incoming trunks and lines, ouput equipment to distribute messages to the proper outgoing trunks and lines, and cross-office paths to connect the equipment together. These cross-office paths, using cross-bar switches and various control circuits, provide a maximum of system flexibility.

Switching centers connect with other stations in the 81D1 system over four different types of facilities: (a) trunk lines; (b) single-station lines; (c) local-outlet lines; and (d) multi-station lines.

Trunk lines connect switching centers together directly, and serve no other stations. A trunk-group may comprise as many as ten trunks when desirable, access being through cross-bar switches and a multiple-trunk circuit. When a single trunk is used, two cross-office paths feed two outgoing circuits, and they in turn feed the trunk alternately. This arrangement keeps traffic moving at a high rate.

Single-station lines are used where a separate line to a station is more economical because of traffic loads and the additional control equipment

THE AUTHORS

GEORGE A. LOCKE entered the Bell System through the New York Telephone Co., transferring to the Engineering Department of Western Electric, now the Laboratories, in 1916. He received the Bachelor of Science degree in 1920, and Electrical Engineer in 1923, from Cooper Union. He has been a licensed Professional Engineer in the State of New York since 1925. Since joining the Laboratories, Mr. Locke has been concerned with the development of teletypewriter circuits and uses, including the design of circuits and apparatus to permit the use of teletypewriters on trans-oceanic telegraph cables. In 1928 he was placed in charge of circuit design for the Bell System Teletypewriter Switching System (TWX) and Automatic Teletypewriter Systems for private-wire networks. Mr. Locke became Telegraph Development Engineer in 1953.

EDGAR R. ROBINSON received the degrees of B. E. E. in 1929 and M. S. in 1930 from Ohio State University, and then joined the Long Lines Department of A. T. & T. in Cleveland. He transferred to New York City in 1941 and then to the Laboratories in 1953. Since 1934 he has been concerned with teletypewriter station equipment and maintenance, later supervising teletypewriter station installation and maintenance methods, costs, and performance results in private-line services. Since coming to the Laboratories, Mr. Robinson has engaged in special services engineering relating to the development and application of private-line teletypewriter switching systems, both automatic and manual.

required at each station on a multi-station line.

Local-outlet lines connect the switching center with teletypewriters in the center itself and at various locations near the center. For example, the downtown ticket office of an airline would be a local outlet for a switching center located at the airport. Machines in local outlets are arranged for receiving only.

Most interesting, perhaps, is the multi-station line. This is used where the expense of separate lines outweighs the cost of additional control equipment at each station, and where traffic loads to and from the stations permit sharing a line. As an example, a multi-station line between San Francisco and Kansas City, *Figure* 1, is considerably more economical than separate lines to each of five stations served at the three locations shown on the map. The job of switching center is to pick up traffic from the various stations on the line as it becomes available, and distribute it only to the station or stations addressed, even if they are on the same line.

The entire system is operated from punched paper tape. An originating operator types an address code and message on a perforator, which has a keyboard very similar to that of an ordinary typewriter, and the perforator produces a punched tape. This tape is then placed in an automatic transmitter that is under control of the switching center.

Once the message has been prepared in this way, the operator can forget about it and do something else; the message will be sent automatically when the line is free. Often a message will be addressed to more than one station; the operator merely precedes it with a two-character code to indicate that it is a multiple-address message and types the addresses in code form; the system does the rest.

The Reperforator-Transmitter

AT THE switching center, the heart of the system is a machine called a reperforator-transmitter, or simply R-T. This combines a typing reperforator — which both punches and prints the message on a tape — and a tape transmitter. An important feature of the machine is that tape can be punched and temporarily stored until an outgoing line is free.

With the exception of those originating at the switching center, all incoming messages are received on an R-T through an incoming line or trunk circuit, *Figure* 3. When desired, an incoming line circuit may be arranged so that messages destined for the switching center are printed directly on a receiving teletypewriter, instead of typing up an R-T.

Fig. 2—An outlying station on a multi-station line at La Guardia Airport in New York City. The operator is Miss Joan C. Walker.

As soon as tape is punched by an incoming R-T, a circuit known as a director reads the address and determines the availability of a path through the office. These directors are connected to crossbar switches through a sequence circuit, to prevent two or more directors seizing a cross-office path at the same time. A message with a correct single address will be directed through the switches to the appropriate outgoing line or trunk.

When multiple outgoing trunks are provided, the message is transmitted directly over a trunk to the next switching center. For single trunks and single- or multi-station lines, the message is fed to one of a pair of R-T's through an outgoing trunk or line circuit. This R-T then stores the message and transmits it when the trunk or line becomes available. The two R-T's feed outgoing messages alternately to the trunk or line.

On a multi-station line, the handling of messages involves more than simply feeding them to the line. The teletypewriter lines are arranged for full duplex operation — messages can be transmitted in both directions simultaneously. Two paths are used, one for each direction of transmission. If two teletypewriters on a multi-station line were permitted to transmit to the switching center at once, both messages would be on the same path and would interfere with each other.

To prevent this, transmitters at the outlying stations are automatically started by signals generated by a transmitter-start circuit at the switching center. Moreover, to prevent re-

ceiving teletypewriters on a multistation line from recording a copy of all messages that are fed to the line, the individual receiving teletypewriters must be kept disconnected from the line at all times except when messages are addressed to them. A control unit at each station on a multistation line, *Figure* 3, includes a mechanical device called a SOTUS (Sequentially Operated Teletypewriter Universal Selector) to read switching codes and act upon them.

When no traffic is being received at the switching center from a multistation line, the transmitter-start circuit automatically makes a roll-call of the transmitters on the incoming line, "asking" them in turn if they have any messages. Such an inquiry can be sent to the stations only over the outgoing lines, which may be busy delivering a message to some station at the time. Therefore, the transmitter-start circuit first interrupts transmission of the message, then sends a pattern of characters that causes the SOTUS units to remove temporarily any connected receivers from the line, and finally follows this by a single-character code that is assigned to a particular station.

Each transmitter remains inoperative until its code is recognized by its SOTUS unit, and then starts sending. When a station has no more traffic to send, the transmitter-start circuit interrogates the next station. If it has no traffic ready, its SOTUS generates a single character to so notify the switching center, and the roll-call continues. When no traffic remains at any station on the line, the transmitter-start circuit restores any receivers that were disconnected, and then remains inactive for a short period before starting another roll-call. Meanwhile, the sending of outgoing traffic is resumed. Thus, interruption of outgoing traffic is accomplished

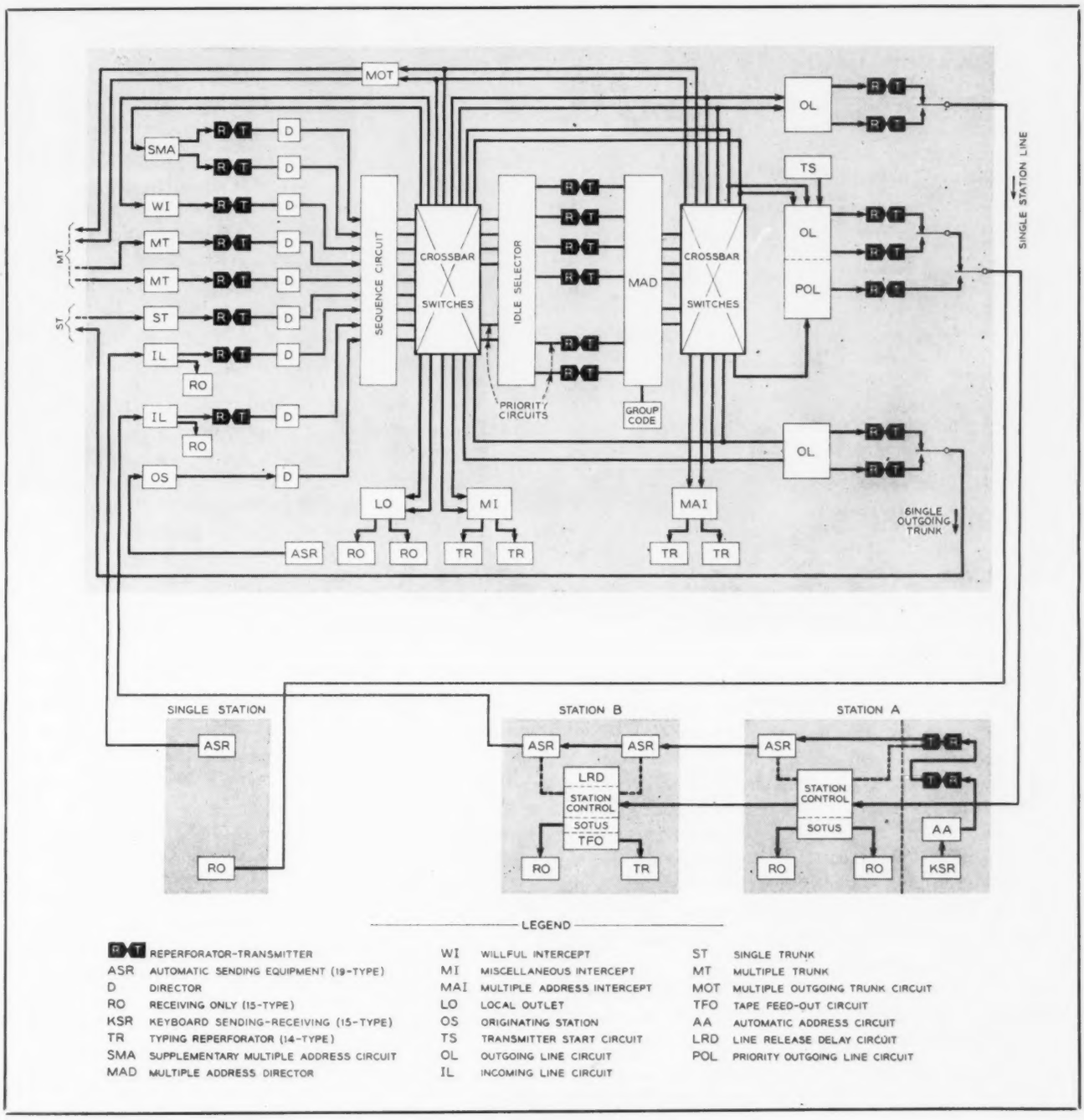
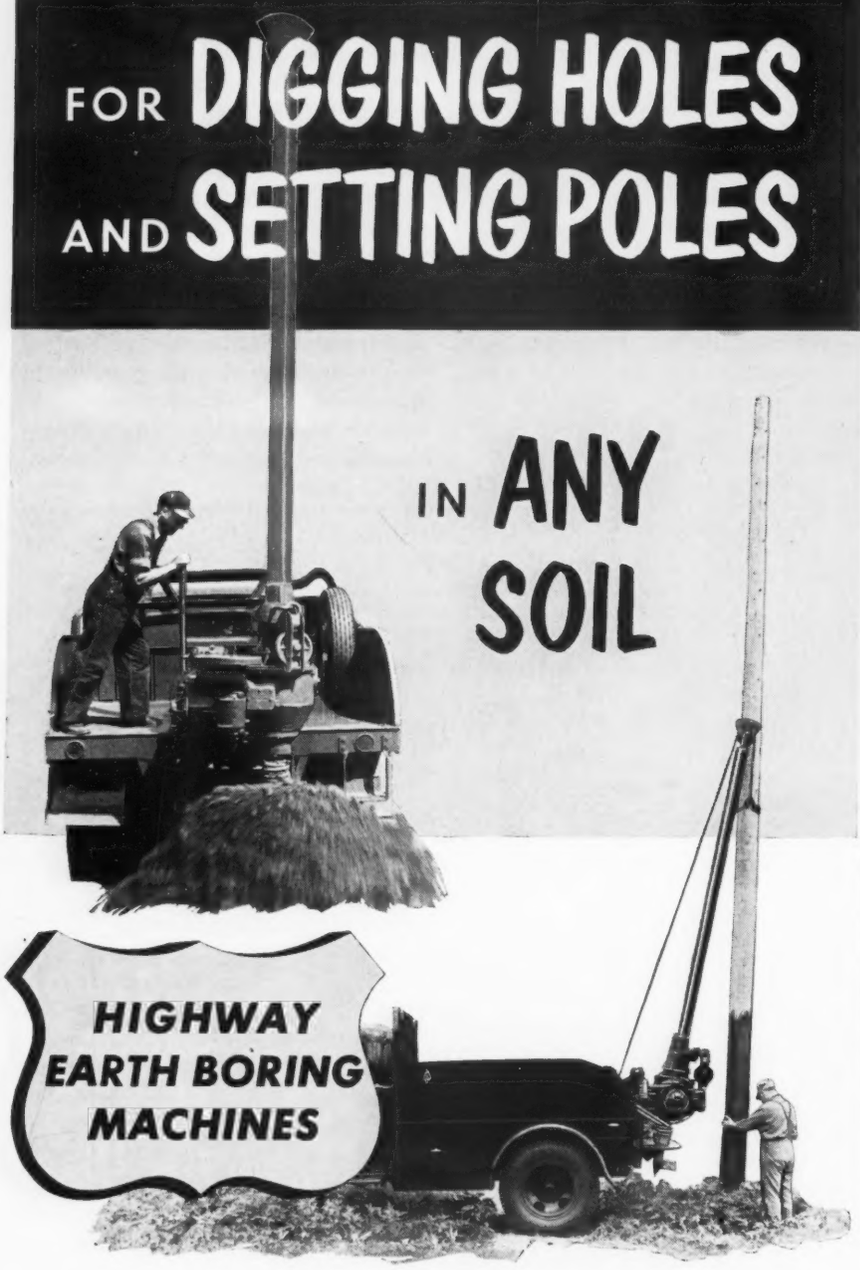


Fig. 3—A typical switching center with three types of outlying stations.

FOR DIGGING HOLES AND SETTING POLES

IN ANY SOIL



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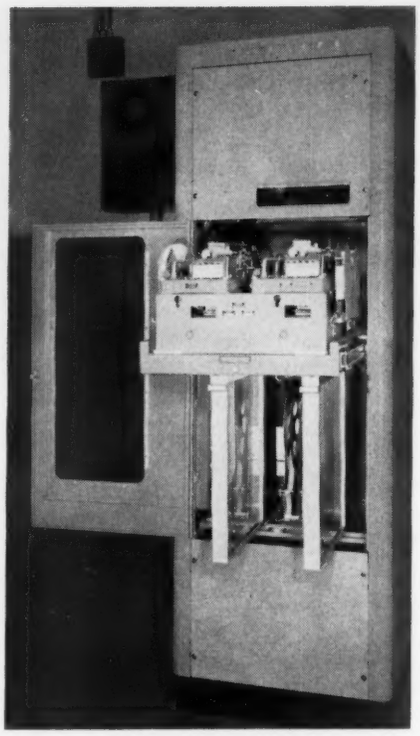


Fig. 4—An automatic-address unit used at some outlying stations.

without mutilation of the copy at the receiving stations.

Messages are often addressed to more than one station, and frequently to the same group of stations. Such traffic is handled at the switching center by a multiple-address circuit, through an additional group of R-T's. Multiple-address messages are directed through the crossbar switches and a selecting circuit to an idle R-T in the group. From the transmitting side of the R-T, copies of the messages are fed to the proper outgoing lines through additional cross bar switches, the multiple-address circuit determining which lines are required. Priority traffic, whether single- or multiple-address, is also handled by the multiple-address circuit for preferential treatment and some of the associated R-T's are assigned only to such traffic.

When a large volume of multiple-address traffic is being handled, a supplementary multiple-address circuit can be called into use. Certain types of multiple-address messages are directed to this circuit, which feeds them to the receiving side of as many R-T's as there are addresses, breaking each message down into several single-address messages. Each R-T then sends its copy of the message to a particular station.

When messages are frequently sent to the same group of stations, an

originating operator need not send all the addresses of the group. Associated with the multiple-address circuit is a group-code circuit. When an operator sends a predetermined two-character code, the group-code circuit recognizes the code and instructs the multi-address circuit to send the message to all stations in the group.

In certain instances an operator may be required to send a message without knowing its destination until the message is completely typed. For faster service under such conditions, an automatic-address circuit has been included in the 81D1 system.

The operator types the message, omitting all address codes, which punches tape in one of two non-typing R-T's. When the message is completely typed, he simply presses an address button on the automatic-address unit. This causes an "end of message" code following the message to be punched in the tape of the first R-T and, immediately thereafter, all addresses corresponding to the chosen button are automatically punched in the tape of the other R-T.

The first R-T then transmits the entire message, including the "end of message" code, to the second R-T where it is punched following the addresses. While this is in progress, and while the resulting final tape is being transmitted over the line, the operator can be typing another message. Although developed to supplement air-to-ground communications, the automatic-address feature can be used wherever message coding at a station involves fixed groups of addresses.

To safeguard all messages, each switching center has several types of intercept circuits. Should a message be addressed to an office temporarily out of service, or to one that has closed for the day, a "willful-intercept" circuit, *Figure* 2, permits attendants at a switching center to hold the message in an R-T until it is deliverable. Two other intercept circuits — one for single-address and one for multiple-address messages — automatically intercept messages received at the switching center incorrectly addressed, and messages whose addresses may be garbled by line or equipment trouble. These two circuits sound an alarm when the message is intercepted, warning the attendant that something is wrong. He may then properly address the message and send it on its way.

The Testing Center

NATURALLY, any automatic system will encounter occasional trouble. In the 81D1 system, each switching center is equipped with a testing center for testing and repairing all the various components. A test bench provides the necessary facilities for testing and repairing the teletypewriter machines. In addition, the operational circuits can be patched to a test unit for checking, and spare circuit units can be substituted in cases of trouble. Periodic checks of the lines and stations are made by the transmitter roll-call feature. All observation and control of traffic in the portion of a network served by one switching center is handled through a central control board.

The versatility and popularity of the 81D1 system can be seen by the fact that six are in service and several more are on order. Three serve major airlines, one serves E. I. du Pont de Nemours and Company, and one serves the Federal Reserve System. The sixth will be used by the Civil Aeronautics Administration, together with a magnetic drum storage arrangement, to evaluate this method of handling weather information and flight plan data for military and civilian aircraft.—***George R. Locke and Edgar R. Robinson.***

EDITOR'S NOTE: — *This article has been reprinted from the "Bell Laboratories Record."*

General Tel. of S. W. Reports on New Rates

GENERAL TELEPHONE CO. of the Southwest was granted the following rate increases in Texas during the month of September, 1955:

Exchange	Effective	Old Rate	New Rate
Charlotte, Tex.	**Oct. 1, 1955**		
Dial	Bus.—1-Party	$7.00	$ 9.00
210 Stations	2-Party	5.50	7.50
	Res.—1-Party	4.25	4.75
	2-Party	3.50	4.00
	4-Party	3.00	3.50
Dickinson, Tex.	**Sept. 26, 1955**		
Dial	Bus.—1-Party	9.00	11.00
1243 Stations	2-Party	7.50	9.50
	Res.—1-Party	4.75	6.00
	2-Party	4.00	5.00
	4-Party	3.25	4.25
League City ,Tex.	**Sept. 16, 1955**		
Dial	Bus.—1-Party	9.00	11.00
744 Stations	2-Party	7.50	9.50
	Res.—1-party	4.75	6.00
	2-Party	4.00	5.00
	4-Party	3.25	4.25
Sudan, Tex.	**Oct. 6, 1955**		
Dial	Bus.—1-Party	6.50	8.00
273 Stations	2-Party	5.00	6.00
	Res.—1-Party	3.75	4.50
	2-Party	3.00	3.75

Gray Label Batteries

—— one of the oldest standbys in the telephone business —always the standard of highest quality—have been sold by Suttle as far back as we can remember.

Koiled Kords

—— one of the newest products in the telephone business that have proved their merit— a really worthwhile advance — are stocked in all sizes, up to and including the 25-foot extension cord.

Autelco Pay Stations

—— the continuation of the Gray pay station line — a revenue-producing necessity from away back — no substitutes — you'll find all popular standard models in stock at Suttle.

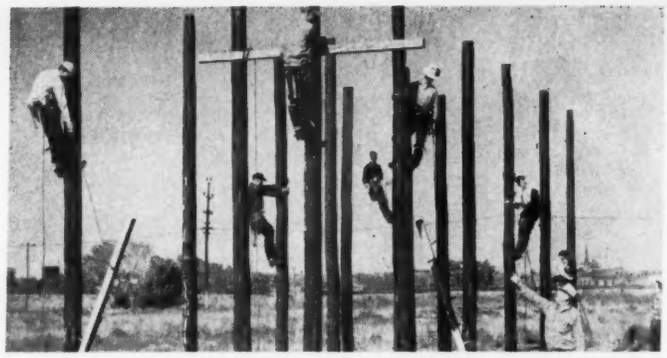
See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

LAWRENCEVILLE ILLINOIS

Technical Developments Reviewed At Plant Conference



HERMAN P. SIEBKEN, chairman of the U-S-I-T-A Plant Committee, presided at the U-S-I-T-A Plant Conference at the Conrad Hilton Hotel, Chicago, on October 10 and presented an outstanding program which continued the high goals set by previous meetings.

Report of the Plant Committee

CHAIRMAN SIEBKEN started the conference with his report on activities of the Plant Committee. Praising committee members, who spend a great deal of time in the interest of the industry, Mr. Siebken pointed out some of the more important aims and accomplishments of the committee during the past year.

"At the spring Plant Committee meeting," he said, "it was suggested that each subcommittee prepare a report for this conference covering new methods, materials, and any other suggestions regarding their phase of telephone plant. Such reports were submitted and through our Washington office were reproduced and are available. We did not contemplate having each director present his report at this conference, because this year the plant conference was reduced to a half day session. Consequently, anyone interested can obtain copies of these reports.

Describing the functions of the Plant Committee, Mr. Siebken stated the committee will try to answer any questions or problems called to its attention.

"Any request," he said, "can be addressed to the chairman or any of the subcommittee directors. A request sent to the committee is usually answered by the proper subcommittee director, and in some instances where the problem is more involved or controversial, all members of the Plant Committee are asked to comment and a summary is then prepared. Any major request it is felt should generally be discussed at a meeting of the whole committee, so that proper recommendations can be made. During the past six months, quite a number of questions have been presented, and the committee has tried to answer as soon as information pertinent to the subject could be assembled.

"At present, there are several re quests before the committee. One very interesting subject brought up was on the standardization of color codes and tracer designation on drop, bridle, inside, distribution frame, and ground wires. George Barney accepted this reqeust and has done an excellent job in obtaining information for all manufacturers interested and summarized this information in his report. It is hoped that in the near future the committee can come up with recommendations on standards for wire color codes and tracer identification for the Independent telephone industry. Another suggestion for a safety code book which could be made available to any Independent company throughout the United States is under consideration."

Mr. Siebken reported that a booklet covering "An Outline of Dial Conversion Procedures for the Small Company" by a special committee under the chairmanship of G. W. Miller, Rochester, N. Y., is in the hands of the U-S-I-T-A office. This booklet is an excellent, comprehensive, and short description of the steps to be followed for dial conversions.

In concluding his report, Mr. Siebken emphasized — "If at any time any member of the committee or subcommittees can be of help to you. I am sure you will find these men most willing and cooperative. In the selection of these members we tried to obtain them from all parts of the country so that some member is not too far from your location. Many of these committee members have been helpful in their state."

Plant Training Program

THE Plant Training Supervisor of the General Telephone Co. of the S. W., W. C. Gaylor, told the Plant Conference "unorganized self training" is often inadequate and costly because it frequently results in poor service, poor customer relations, wasted time, wasted materials and a dissatisfied employe.

Reviewing the history of his company's plant training program, Mr. Gaylor stated that "Before organizing our plant training program, we visited with one of the larger companies and attended some of their training sessions so we could become familiar with the general problems associated with an organized training program.

"This information proved quite helpful," he said, "even though we could not apply their particular training program in our company. Training material being used by other companies within our own system was obtained and evaluated to determine how well it might apply to our program. We soon found that some training material to fulfill our needs was readily available, but we would have to prepare a sizeable amount of our own material."

As the next step, General of the S. W. made a general survey of its plant performance to assist in determining what overall training was needed for plant personnel, and what specific training was most urgent.

"An analysis was made of the different plant jobs where the need for training was most pressing," Mr. Gaylor said. "This analysis enabled us to decide what training was needed to equip those personnel with the proper job knowledge and ability. We discovered that many of our em-

ployes had insufficient basic knowledge that was essential to the efficient performance of their jobs. This condition was acute in station installation and maintenance, in central office maintenance, and the maintenance of carrier and toll equipment. There was a lack of consistency, efficiency and economy in part of our work. A few key personnel were handling much of the trouble load."

Mr. Gaylor stated that General of the S. W. has in operation 11 different types of automatic-dial central-office switching equipment; numerous different types of telephone instruments; over 12 different types of carrier telephone equipment; many different types of special station equipment, PBX, manual switchboards, toll terminal equipment, and countless other items.

"These training problems were not easily resolved," he said. "However, we decided to begin our training program with basic training because this would allow our employes to progress much faster as more advanced training was necessary and it would give immediate relief in our installation and maintenance problems. This basic training would be followed by more advanced instruction and would serve as a "prerequisite" to further training.

"An adequate working knowledge of electrical fundamentals and apparatus is essential for the proper installation and maintenance of telephone plant, since electricity is used extensively in the operation and testing of telephone equipment. Personnel must know *how* equipment works and the proper installation and maintenance procedures. The electrical knowledge required for the different jobs is varied; therefore, only the necessary electrical fundamentals that are applicable to the particular field of work are being taught in our basic courses. In this training we were quick to eliminate all electrical theory it would be nice to know and settled for only that part our personnel would 'need to know' in order to perform their jobs efficiently and safely . . ."

Mr. Gaylor stated three types of training were established: — a centralized training center, off-the-job; in the field, off-the-job; and on-the-job. "This type of training," he said, "was further classified as major off-the-job, minor off-the-job and on-the-job training, respectively."

"Since a large number of our plant people would directly benefit from formal instruction, a centralized training center was established because it would be too costly to provide certain training effectively in the field. At the present time classrooms are equipped for training in station and PBX equipment, central office equipment, and toll terminal equipment. All major off-the-job training is being conducted at this center.

"A number of minor off-the-job training sessions are now being conducted in the field. This training is done primarily to prepare personnel for expected work assignments. Three full-time plant supervisory personnel are assigned to our off-the-job training. Since training employes is an essential part of good supervision, much of our on-the-job training is being done by first-line plant supervisors."

Mr. Gaylor reported some of the tangible results of the present Plant Training Program are: Improved job knowledge for plant personnel; increased enthusiasm of our plant employes to learn more and their desire to do a better job; improved methods for locating trouble; the promotion of better customer relations; improved employe relations; the promotion of safety consciousness; the establishment of more consistent work procedures; an indication of how much training is needed; an improvement in plant performance and service; and a better knowledge of each employe's ability.

"Minor off-the-job training is proving very helpful in providing training quickly where training is very urgent," he said. "Recently, we have completed two training schools in the field on a new 12-channel carrier system, and an orientation course in central office switching equipment, prior to dial cut-over. Before the end of the year, we expect to complete two schools on a new four-channel carrier; and another orientation course on switching equipment. In addition, we will have a special course prepared on Plant Customer Relations."

Microwave for Independents

MARCUS L. DONALDSON, chief engineer of the Peninsular Telephone Co., Tampa, Fla., reported that the past two years have seen more growth in the use of microwave by Independents than all previous years

clear lines fast with...

SEYMOUR SMITH
"Telephone" Tree Pruner

Here's the standard, the choice of the utility industry for years. Powerful action to cut cleanly—tough and almost unbreakable—easy to handle. No. 12 Pruner Head has 1½" cutting capacity. The lighter, No. 11, handles up to 1" branches. Both are malleable iron castings with tempered steel cutting blade.

Poles (18 ft. 3 sections) are of selected spruce with positive locking, seamless aluminum, telescoping ferrule joints.

FAST CUTTING PRUNING SAWS

Designed for fast, easy cutting—large, deep teeth, finest Swedish charcoal steel, streamlined, laminated hardwood handles. Every model you need up to chain saw work.

No. 20 POLE SAW HEAD

Tough aluminum head with large hook and outside horn for pushing branches, raising wires, etc. Also paint brush holder with wire clamp that holds brush securely. Fast-cuting 16" blade. Poles available.

FREE: Send for Seymour Smith catalog pages on tools for utilities. Keep them on file for easy reference.

Quality Tools
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Since 1850

SEYMOUR SMITH & SON, Inc.
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construction and maintenance DIGEST

- 25-year battery
- Lightweight champ
- Profitable noise
- Real cool sitting
- Wire saves poles

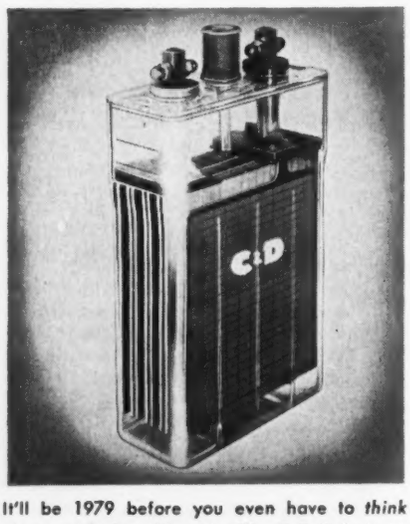
Published every month to help you get the most out of your materials and supplies dollar

by C. J. Reynolds, Stromberg-Carlson Company

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

Battery will live 25 years

A quarter of a century is the expectancy of an extra-life battery made by C & D Batteries, Inc. In full-float service, their PlastiCal (lead calcium grids) battery will serve your power needs faithfully —often well beyond its 25-year expectancy.

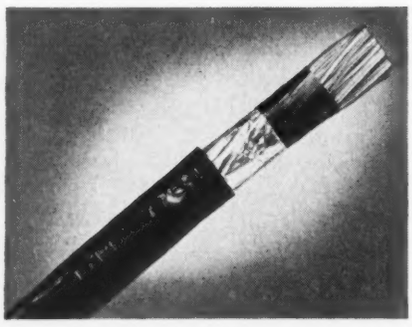


It'll be 1979 before you even have to *think* about replacing this extra-life C & D battery, if you install it now!

C & D Batteries' PlastiCell (high tensile, special alloy grids) battery offers reliable power supply at lower cost, with a life expectancy of 14 years.

Here's easy-handling cable— Aerial, burial or tucked in a duct

You can cut installation and handling costs, save yourself a lot of time, with Ankoseal lightweight plastic cable.



Polyethylene insulation and special jacket compound of this cable give plenty of protection.

It has polyethylene insulation that gives you excellent moisture resistance and thereby eliminates the hazard of wet cable. Another advantage of polyethylene is its high dielectric strength, which means less lightning trouble.

And to give you an unbeatable protection from weather, the Ankoseal 454 jacket compound is used. This special formula not only shrugs off climatic conditions, but also resists corrosion, electrolysis and vibration cracking.

Ankoseal lightweight plastic cable is made for aerial (both messenger and self-supported), for duct and for direct burial installations.

Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in a spot as noisy as a boiler factory! It costs the subscriber less than a booth—and you get the revenue!

Your Stromberg-Carlson representative can offer prompt delivery on your order. Ask him for complete details.

Cane-seat chair keeps operators cool, comfortable

This operator's chair has a cane seat, which is much cooler, cleaner and more comfortable than other types. It retains all the posture advantages for which Sturgis is famed. It is called the Sturgis SC-240.

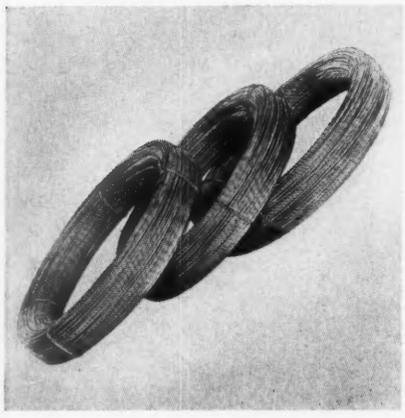
The posture-curved, well-cushioned backrest is covered in genuine leather.

The exclusive Sturgis "Follow-Flex" feature automatically adjusts to the operator's every movement, supports her restfully all the time, discourages fatigue, keeps her at top efficiency.

Other new and welcome features include a plastic-coated steel foot ring which retains its color, and a handy purse holder, available on request. Six seat heights, all adjustable.

Save 10-15 poles per mile

A net saving of 10 to 15 or more pole structures per mile is possible where **Crapo** High-Tensile Telephone Line Wire is used in long-span construction. Fewer pole structures mean substantial savings in time, labor and material, and in maintenance.



Crapo HTL-135 makes possible spans of 350 feet in heavy, 450 feet in medium, and 500 feet in light loading areas. Its practical economy should be considered for new extensions and where old lines are to be replaced.

Crapo HTL-85 (No. 12 B. W. G.) permits spans of 225 feet in heavy, 325 feet in medium, and 375 feet in light loading districts; provides stronger spans on existing pole structures. Both wires possess superior telephonic transmission qualities.

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put together. Small as well as large companies are using it in ever-increasing amounts.

"This growing use of microwave is not a blind stampede," he said, "There are many sound reasons why companies are selecting microwave over other types of toll facilities."

Mr. Donaldson presented six basic reasons why microwave is often selected over cable or open-wire for a new toll facility:—(1) Low initial cost; (2) high quality transmission; (3) reliability; (4) ease of installation; (5) flexibility and expandability; and, (6) low maintenance requirements.

"If we take a closer look at initial cost," he said, "it will be seen as an extremely variable factor. Each individual installation must be evaluated separately. Some installations require very little additional investment beyond the cost of the transmitting and receiving equipment, channelizing equipment, and the antennas. In other cases, where repeaters are located in remote areas or where high towers are required, the cost of providing land, buildings, towers, access roads, regular and emergency sources of power may make the cost of the microwave equipment insignificant by comparison. In either case, the complete cost of a microwave system will often prove to be substantially less than the cost of a new open-wire or cable installation over the same route. Microwave systems longer than 15 or 20 miles generally cost less than a comparable cable system."

Stating that a second reason for the strong trend to microwave is the excellent transmission quality obtained from microwave circuits," Mr. Donaldson said, "Our experience at Peninsular has been that microwave is equal to, or better, in transmission quality than either open-wire or cable."

"We now have two microwave systems in operation and four more under construction for telephone use," he said. "We also have five microwave systems for television use. Our favorable experience with these systems has proved that the transmission quality obtained from good equipment—properly engineered and installed—meets every possible toll requirement."

Discussing the reliable operation of microwave under adverse weather conditions, Mr. Donaldson said, "a well constructed microwave antenna installation can be virtually storm-proof.

H. B. SIEBKEN, Madison, Wisc., is chairman of the USITA Plant Committee.

"In addition to being nearly storm-proof," he said, "microwave has a tremendous advantage over cable because of the ease with which it can be installed. Even systems which require repeaters in remote and rugged country are installed more easily than cable systems which must be constructed across the same difficult terrain. In some cases microwave is the only possible solution.

"Most microwave systems likely to be installed by an Independent company are relatively short with only one hop — or, at the most, 3 or 4 hops. Such systems can usually be installed and turned up for service in a few weeks. One of the Peninsular systems was completely installed in only ten days. In addition, there are no problems of right-of-way or difficulties in laying cable in congested business or residential areas."

Referring to the ease with which microwave can grow — quickly and inexpensively, Mr. Donaldson said, "One type of microwave now available can be installed initially with less than 12 channels, then expanded later by the simple addition of more channelizing equipment to a total of 120 channels on the one radio channel.

"By the installation of additional transmitters and receivers on the same antennas," he said, "this system can be expanded to as many as 360 voice channels. The channelizing for this system is arranged in such a way that a failure of any one radio transmitter or receiver will not affect

HERE'S ANOTHER WAY...

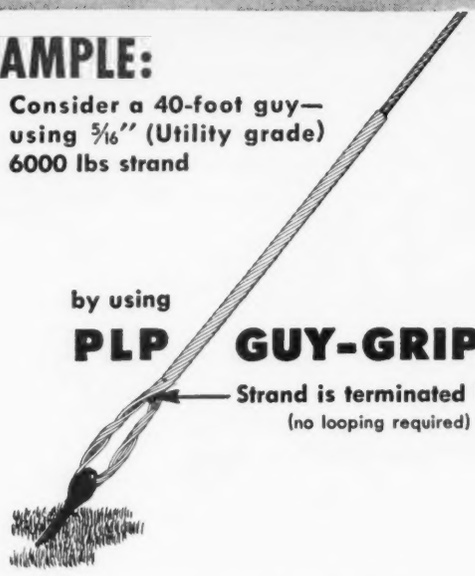
Preformed Guy-Grips CUT GUYING COSTS!

EXAMPLE:

Consider a 40-foot guy— using 5/16" (Utility grade) 6000 lbs strand

by using

PLP GUY-GRIPS



Strand is terminated here
(no looping required)

1 Since PLP Guy-Grips eliminate looping, strand saving of 6 feet or more per guy results. **SAVING: $.29 per guy**

2 Substitute ¼" Extra High Strength Strand — rated 6650 lbs. PLP Guy-Grips make this possible since they hold the full rated strength of E.H.S. Strand. The following strand savings result (current cost of 5/16" galvanized strand is $1.93 per guy while ¼" E.H.S. costs $1.36 per guy)*: **SAVING: $.57 per guy**

TOTAL STRAND SAVING ALONE $.86 per guy

3 Preformed Guy-Grips cost only $.55 each for ¼" E.H.S. Strand size. (PLP Cat. No. 25 GDE-¼")

Compare this cost with your current fitting.

PLUS LABOR SAVINGS

In every Preformed Guy-Grip installation, you hold the full strength of the strand.

☑ CHECK THESE ADDITIONAL SAVINGS:

✓ With PLP Guy-Grips, installation savings range upwards to 50%.

✓ Save an additional 10% by using 3-wire strand instead of 7-wire. PLP Guy-Grips will hold 3-wire strand equally well.

✓ Save space and inventory costs by standardizing on PLP Guy-Grips and lighter E.H.S. Strands. One size strand can be substituted for several sizes and grades previously used.

PLP GUY-GRIPS ARE ALSO AVAILABLE IN COPPER-WELD, BRONZE, AND STAINLESS STEEL.

**Based on current strand prices—75,000 feet to carload lots.*

PLP GUY-GRIPS DON'T SLIP . . . even under impact!

Made in accordance with or for use under one or more of the following U.S. Patents: 2,575,019; 2,587,524; 2,609,653; 2,693,865; other patents pending.

PLP

PREFORMED LINE PRODUCTS COMPANY

5349 ST. CLAIR AVENUE • CLEVELAND 3, OHIO

more than 120 channels. This is better reliability than you can obtain from a single cable."

Commenting that many people seem to think microwave requires frequent and expensive maintenance, Mr. Donaldson reported that high-quality microwave equipment is available from manufacturers who know the problems of the telephone industry and who have designed their equipment so that it can be maintained using normal telephone procedures.

"With such equipment, plus the advantage of having the maintenance concentrated all at the terminals or repeaters," he said, "the actual cost of microwave maintenance should be less than that required for a cable or open-wire installation."

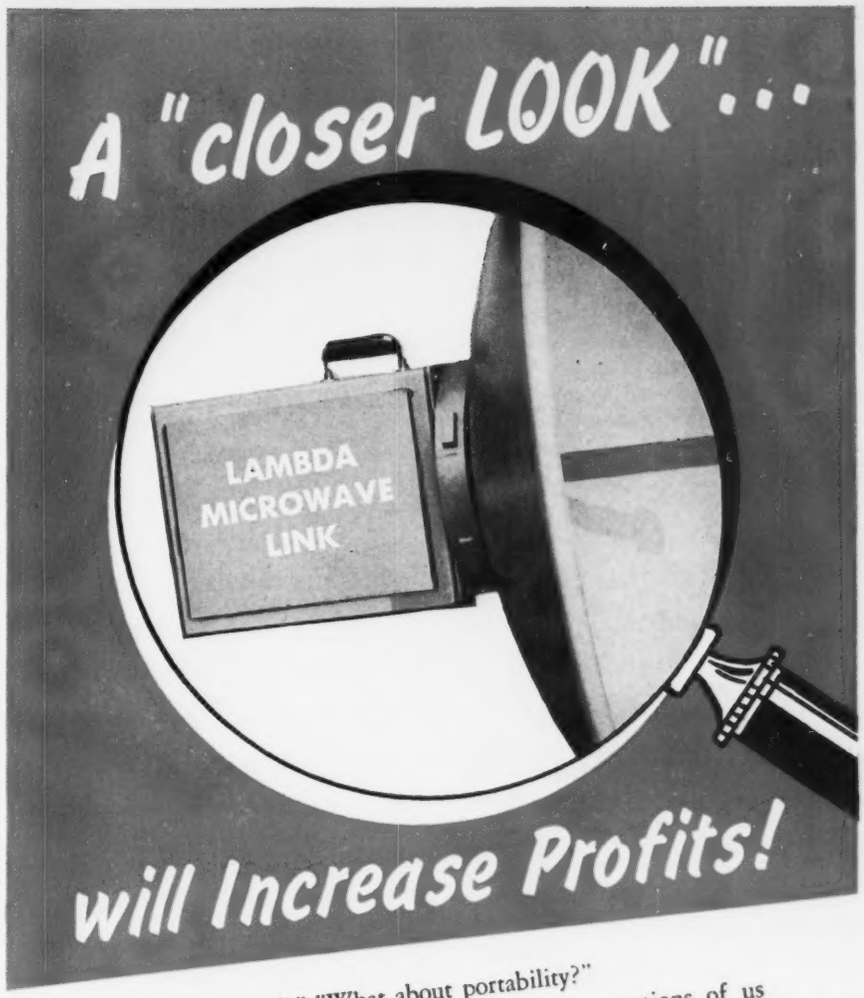
Mr. Donaldson emphasized that in considering any type of microwave, the following questions should be asked: —

(1) Are the manufacturer and distributor reliable? In other dealings with you have they always shown they have the best interests of your company in mind?

(2) Are the manufacturer and his distributor experienced in telephone requirements? Some manufacturers build their equipment primarily for industrial or other markets and have not attempted to build microwave equipment designed specifically to integrate into the telephone plant. Equipment designed for industrial use, though often cheaper than telephone type equipment, is seldom really less expensive because it may not be completely satisfactory for toll use. Microwave equipment is available from manufacturers who have designed their equipment specifically for the telephone company toll plant. Everything in their equipment, from the manner of rack mounting to the instruction books, drawings, and descriptive literature has been designed for your use. This equipment may cost a little more in the beginning but it should make up the difference in lower operating and maintenance costs.

(3) Does the manufacturer stand behind his product? Despite any guarantee he may give you, does he have a reputation of working with the customer?

(4) Are the manufacturer and his distributor sympathetic to your problems? Too many manufacturers and



"Powerful?" "Rugged?" "What about portability?"

Engineers and management have asked these questions of us many times. Our answer is this: Yes, the LAMBDA LINK has all of these features and more. As evidence, we note that the LAMBDA LINK was used to carry the historic atom bomb telecast from Yucca Flats, Nevada, to Los Angeles, a distance of 320 miles; the longest hop being over 80 miles. Even with the extreme climatic conditions encountered the LAMBDA LINK functioned perfectly.

THESE FEATURES DESERVE YOUR "CLOSER LOOK!"

COLOR — Meets all FCC & NTSC color standards.
PORTABILITY — Complete system packaged in compact "suitcase" style housing.
FREQUENCY — STL and Common Carrier (5.1-7.4 KMc).
POWER & RANGE — 1 watt min.; effectively used on 80 mile hop.
LONG HAUL — Multi-link circuits up to 8 links in tandem.
OTHER EQUIPMENT — Lambda manufactures a complete line of auxiliary and test equipment such as camera cables, parabolas, attenuators, etc.

If you have difficult microwave link applications, contact Lambda-Pacific to discuss your requirements.

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construction and maintenance DIGEST

- **Dependable ringing**
- **Anti-aging cable**
- **Block that bolt**
- **Die-hard battery**

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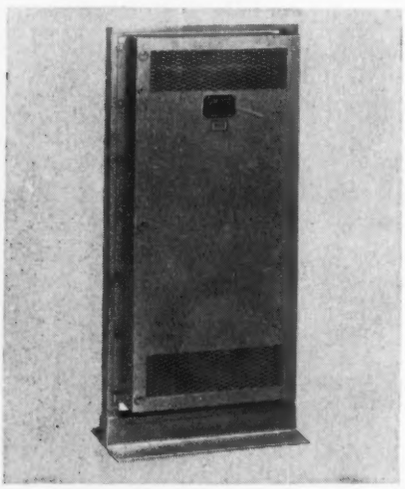
by C. J. Reynolds, Stromberg-Carlson Company

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

Easy way to generate synchromonic ringing frequencies

Here's a dependable, dollar-saving way to generate frequencies for synchromonic ringing systems—15, 20, 30, 42, 54 and 66 cycles.



Model S-5 can be equipped to supply either 15 or 20 cycles as the fifth frequency, in addition to 30, 42, 54 and 66 cycles.

With no moving parts, the Lorain S-5 Sub-Cycle needs no lubrication or maintenance attention, once installed.

It uses a unique conversion principle, combined with basic sub-cycle circuits, for producing the output frequencies you need. An important feature of this principle is that output frequencies are actually locked to AC line frequency, using a definite ratio. Thus you get precisely accurate ringing frequencies.

You also get exceptional voltage regulation on all five ringing frequencies. This is an important factor in the elimination of cross-ring in multi-frequency ringing systems. The output voltages are substantially independent of input voltage variations or load conditions on other ringing frequencies.

For maintenance-free, truly reliable conversion to synchromonic frequencies, ask your Stromberg-Carlson representative about the Lorain S-5 Sub-Cycle.

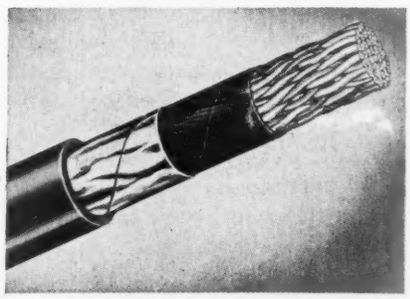
Cable has polyethylene sheath for extra-long life

In outside cable installations, you can side-step the ravages of weather, sunlight and temperature, saving yourself many dollars and hours in maintenance.

To do this, use the protection of the polyethylene sheath on Telecable®. Telecable exchange area cable for aerial and duct use has polyethylene insulation **and** polyethylene sheath. No other thermoplastic material has given as good assurance of aerial cable sheath life expectancy as has polyethylene.

Specially treated to resist sunlight, the Telecable sheath has maximum chemical resistance, is not subject to environmental cracking.

Extremely light in weight, tough, yet flexible, it resists the stresses encountered during installation. You can expect top performance of Telecable for upwards of 20 or 25 years.

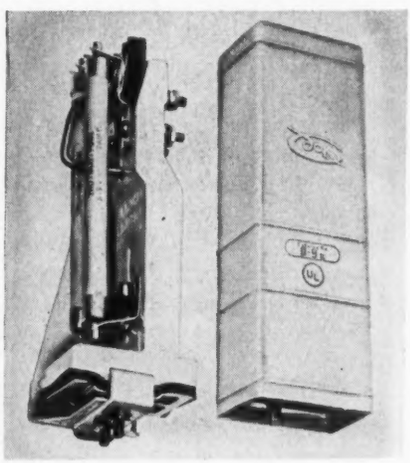


Telecable exchange area cable has outstanding weather resistance and transmission qualities.

Available in No. 24, No. 22 and No. 19 A.W.G. in sizes up to and including 202 pairs. For further information, consult your Stromberg-Carlson representative.

Protect telephones from lightning

No larger than a good-size candy bar is the Cook 09u telephone protector shown here. But it can save you a lot of grief and you can protect single circuits, both indoor and out.



Individual circuits are protected by small unit, measuring 6"x2½"x1¾".

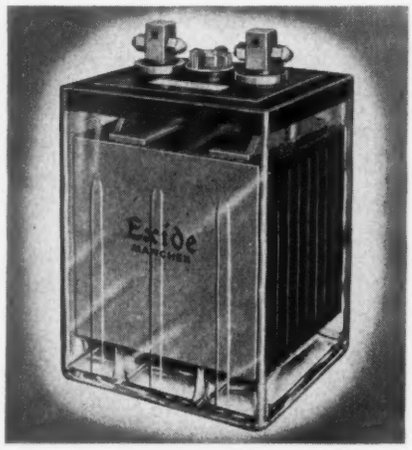
The body is a single piece of heavy white glazed porcelain. Lightning arrestors are two Tru-

Gap dischargers, two flat carbons mounted on a copper ground, and two A-9u 7-amp. lavite fuses. Neoprene gasket locks out insects, dust, snow, etc.

Protect yourself from battery failures

You can use Exide Manchex Batteries for central office and private branch exchange equipment, and be sure you'll get a supply of power when you need it. These batteries have been proven daily in exchanges of every size, and for 67 years Exide Batteries have been serving the telephone industry.

The manchester positive plate with its exclusive button-type construction provides exceptionally



Old age, even high discharge rates, have little effect on this battery.

long life. Latest developments on molded glass jars permit compact space-saving installation.

Heavy terminal posts with copper inserts provide extra conductivity for sustained voltage at high discharge rates. Microporous rubber along with slotted plastic separators, are impervious to chemical and electrical reactions. Plastic spacers assure plate alignment.

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Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3.

distributors are out to sell all the microwave they can without caring whether you need it or not.

(5) An important final question: "Do the manufacturer and his distributer sell to your customers without first consulting you?"

"Some manufacturers," Mr. Donaldson said, "are so eager for sales they will come into your territory and compete with you in providing private or leased communications facilities. Reliable manufacturers, however, respect your operating territory and will sell to your customers only through you or with your consent. Some of these customers are now coming to the telephone companies to take over these services after they have found many cost items were overlooked in the original planning, such as replacement of equipment, taxes on investments and good maintenance.

"A word of warning in taking over these services — you may find you are taking over a radio system instead of a communication system. As a word of explanation many of you have heard radios in cabs, police and law enforcement agenies, and have tried to distinguish what was being said. In most of these systems it is impossible to recognize the speaker's voice. In telephone communications systems we should always strive to meet the standard signal-to-noise ratio as well as established transmission levels.

"The answers to these questions are very important — often more important than the details of the equipment itself. Choose a manufacturer and distributor you can rely on and you will have little to worry about in the planning, buying, installation and operation of microwave systems."

Equipment Planning For Toll Dialing

CALLING ATTENTION to Bell System estimates that approximately 50 per cent of the toll and multi-unit calls in the United States will be operator dialed and about 25 per cent customer dialed by the end of 1955, C. M. Davis of the General Telephone Co. of California, Santa Monica, reported that "at some future date, (objective 1965) the Bell System estimates that up to 80 per cent of all toll calls in the United States will be customer dialed with the remaining 20 per cent representing operator dialed, person to person, collect, time and charge and other calls which cannot be completed by the customer."

"In order to achieve this objective," he said, "several methods of providing operator and customer toll dialing will be utilized, but outside of the larger metropolitan areas, the Bell System Centralized Automatic Message Accounting (CAMA) method appears to be the most practical and economical approach for the Bell System. In most instances, the CAMA centers will be situated in Bell System Company exchanges; however, the CAMA center or the Independent company equivalent, in some areas will logically fall in an Independent exchange in which case the Independent company could center for adjacent Bell System or other Independent exchanges."

Emphasizing that regardless of ownership, these CAMA centers are going to be established in great numbers during the next few years, and in the majority of cases they will be Bell owned and operated, Mr. Davis commented that "any Independent company operating in one of these CAMA areas will have to determine from the conditions invloved whether or not its exchange will be included in the CAMA network either initially or subsequently."

"Since there are several engineering approaches to this problem," he said, "with varying cost, service and revenue considerations, no simple set of rules can be established which will provide satisfactory answers. Accordingly, each exchange or toll dialing network must be studied individually in order to evaluate existing local conditions and determine from this study the most economical type of operation required to meet service demands."

Mr. Davis reported that customer dialing of short haul toll and multi-unit calls with automatic ticketing equipment of Independent manufacture is presently operating very successfully in several large and small limited networks. All Independent automatic toll ticketing systems presently operating in the Los Angeles area, as well as those presently in service in other parts of the country, are operating on a limited network basis via local completing switchtrains and require relatively few of the Nationwide Toll Dialing features such as flash-busy and the like, and no time sched-

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ule has been established for adding the nationwide customer dialing facilities.

"The possibilities for service improvement and increased economies in the limited network field of customer dialing should be explored since there appears to be a large field of application for this service in the Independent industry," he said. "To satisfy the needs of this growing service, several types of Short Haul Automatic Ticketing Systems have been developed by the Independent manufacturers for limited network application. This equipment provides appropriate facilities for making significant progress in this phase of customer dialing, and in addition, can often be accomplished at a substantially lower initial cost than would be required to meet the requirements for Distant Dialing as contemplated by the Bell System.

"There would appear to be little requirement either now or in the foreseeable future for many of the nationwide customer dialing features in many of the medium to small Independent exchanges. In view of this, efforts should be directed toward establishing limited network operator and customer Toll Dialing wherever these systems will provide economical operation and leave detailed plans for expansion to nationwide customer dialing to be determined by future developments.

"To the extent of being economically practicable, any toll dialing or automatic toll ticketing equipment provided should be technically compatible with the Bell System requirements and, when converting from manual to dial or replacing or adding to existing dial offices, the proper types of equipment can usually be provided at no additional cost. The engineering approach should be to include this equipment whenever possible to avoid possible major expenditures at some future date. Toll switchboards having trunk access to the nationwide toll dialing network should be modified to meet the requirements specified for Operator Toll Dialing."

Reviewing the problem of providing toll dialing equipment in an exchange, Mr. Davis emphasized that the best engineering approach consists of the planning engineer becoming thoroughly acquainted with the fundamental system requirements and then, through consultation with his associated Bell Operating Company, determining how the exchange and toll trunking must be arranged for operation within the toll switching and area numbering plan.

"In most instances," he said, "a thorough knowledge of toll dialing technical features, transmission design, traffic and trunking arrangements is required, and if personnel with these qualifications are not available, engineering assistance from an equipment manufacturer should be obtained. Engineers capable of determining the most economical and best technical arrangements are available in only a few of the large Independent companies. Of necessity, therefore, the smaller companies must depend on the equipment manufacturers to determine requirements and provide equipment compatible with the network involved and, in most instances, they will also have to provide the equipment installers and technical help necessary to test and cut the equipment in service."

Continuing his discussion on Independent engineering approaches, Mr. Davis stated that one of the most critical problems facing the Independent industry today is the shortage of trained technical personnel required to successfully engineer, install, test and maintain the new types of equipment being provided to meet the expanding communications industry.

"Technical personnel," he said, "must be trained in the use of many new and different types of toll trunk equipment not normally encountered in Independent exchanges and in many cases, new even to Bell operating companies. The Bell companies are presently experiencing the situation that their toll maintenance personnel are not always adequately trained in the techniques incident to the testing and maintaining of intertoll dial equipment . . ."

Mr. Davis suggested that means must be found to attract the proper type of personnel to the telephone industry. "The responsibility of such a program," he said, "must include the provision of sound training and the adequate experience essential for good installation, maintenance, engineering and successful operation of the present and future complex telephone systems . . ."

(Copies of papers reviewed in this report may be obtained from USITA's Washington, D. C., office.)

Questions and ANSWERS

Conducted by Jay G. Mitchell

IN THIS ISSUE Mr. Mitchell discusses a — (A) Important Correction of a typographical error; (B) the six different bases for the Decibel in use; and (C) Illustrating comparatively two decibel formulas.

Important Correction

THROUGH ONE OF those inexplainable train of events that occur in printing establishments, and elsewhere as well, an error was printed in the table at the top of page 76, TELEPHONE ENGINEER AND MANAGEMENT, issue of September, 1955. The error in question occurred in the tabulation entitled "VOLTS IN LOOP OF 600 OHMS IMPEDANCE VS. DECIBELS (Dbm.)" in the fourth line from the top of the table which line sets out the data pertaining to 40 A. C. Volts. This line should read from left to right as follows the column headings being shown for clearness.

It is suggested that those who have clipped the tabulations shown in the series on "THE DECIBEL CALIBRATION" for note book preservation will correct the error in their copy in pen and ink. "*Questions and Answers*" thanks those that have been so kind as to call attention to this error as printed. The correcting figures are underlined. The correct data is as follows:

A.C. Volts	Amperes	Watts	Ratios Power	Volts	Sign	Dbm.
40.0	0.0670	2.667	2666.67	51.95	plus	34.26

QUESTION: — *The material on "The Decibel Calibration" which has been published in TELEPHONE ENGINEER has been very welcome in our engineering and the several tabulations have been most carefully studied with great benefit. In one of the early installments the statement was made that several systems of determining the comparative effectiveness of telephone plant and equipment in the transmission of voice carrying electrical currents were in use. It was also stated that only two standards were in common use in the United States. Can the others be set out merely as a matter of record? Are the basic principles involved in all of these systems the same? A brief statement on this matter will be greatly appreciated.*

ANSWER: — The underlying principles involved in all these transmission comparing schemes are the same and, except for the difference in the mathematical bases, the same methods are used. In all the electrical power of the voice carrying currents is compared with an assumed standard of power. This standard of power is based upon the power that would be dissipated in a loop of predetermined impedance by a definite A. C. Voltage. The comparison is made by measuring the *voltage* observed because the power dissipated in any electrical circuit is proportional to the square of the volts and inversely proportional to the impedance in the circuit.

In making observations an instrument calibrated on this basis is used. It is in reality a sensitive alternating current voltmeter calibrated according to a scale designed to express the decibels direct or the alternating current voltages which can be converted to decibels by the application of a tabulation such as has been presented in previous issues. There are six diffsion from A. C. Volts to decibels is ferent bases upon which the conversion made but only two, as has been stated, are in general use in the United States. The six are shown below: —

Loop Impedance	Power
500 Ohms	0.001 Watt (1)
500 Ohms	0.006 Watt (2)
Loop Impedance	Power
600 Ohms	0.001 Watt (3)
600 Ohms	0.006 Watt (4)
Loop Impedance	Power
1,500 Ohms	0.001 Watt (5)
1,500 Ohms	0.006 Watt (6)

QUESTION: — *We are of the opinion that formulas may be used to compute the decibels for a given condition provided the alternating current voltages, read on a sufficiently sensitive voltmeter, which are present in the circuit under observation are known. The tables which have been published in* TELEPHONE ENGINEER & MANAGEMENT *are most useful and appear to cover every possible need but they are not always available and when available must be carefully identified to make sure that they cover the conditions of the instant problem.*

If a few formulas can be devised they can be memorized and, since a sensitive voltmeter is or should always be available, the observed voltages can be converted into decibels sufficiently close to final accuracy to serve perfectly in preliminary studies.

ANSWER: — This very carefully worded inquiry is indeed most welcome as it indicates that the material on "The Decibel Calibration" has been carefully read and is understood. No doubt this company will be enabled to eliminate many actual or potential causes of substandard transmission if the underlying prin-

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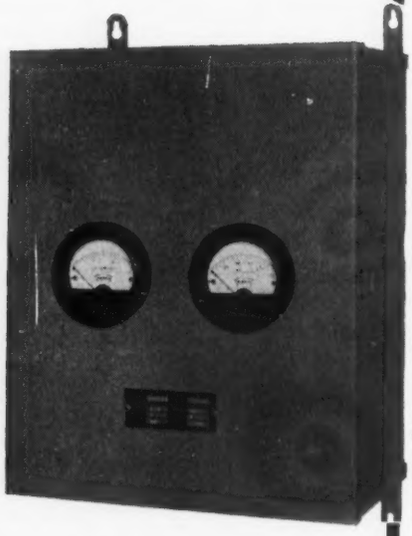

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ciples are as well understood as this inquiry seems to indicate. Formulas for the conversion of observed alternating current voltages are very simple and may be stated as follows.

Let "E" represent the observed alternating current voltage.

The formula for converting alternating current voltages into decibels (500 ohm loop, 0.006 watts), designated for identification as formula (A) is as follows.

$$\text{Formula (A) Decibels (Db.) are 10 Log. } \left(\frac{E^2}{3}\right)$$

The formula for converting alternating current voltages into decibels (600 ohm loop, 0.001 watts), designated for identification as formula (B) is as follows.

$$\text{Formula (B) Decibels (Dbm.) are 10 Log } \left(\frac{E^2}{0.6}\right)$$

These formulas will be illustrated in the following conversions of three observed voltages for illustration. The three voltages to be converted, as examples, are 0.2 volt, 2.0 volts and 20.0 volts.

For an observed voltage of 0.2 the solution according to formula (A) is as follows.

Db. equals 10 times Log. 0.013 (0.04 divided by 3), or *minus* 18.75.

For an observed voltage of 2.0 the solution according to formula (A) is as follows.

Db. equals 10 times Log. 1.333 (4 divided by 3), or 1.25.

For an observed voltage of 20.0 the solution according to formula (A) is as follows.

Db. equals 10 times Log. 133,333 (400 divided by 3) or 21.25.

For an observed voltage of 2.0 the solution according to formula (B) is as follows.

Dbm. equals 10 times Log. 0.066 (0.04 divided by 0.6) or *minus* 11.76

For an observed voltage of 2.0 the solution according to formula (B) is as follows.

Dbm. equals 10 times Log. 6.666 (4 divided by 0.6) or 8.24

For an observed voltage of 20 the solution according to formula (B) is as follows.

Dbm. equals 10 times Log. 666.66 (400 divided by 0.6) or 28.24

The six examples set out above will serve to promote a better understanding of this interesting and important subject. QUESTIONS AND ANSWERS will be glad to answer further inquiries submitted for explanation. — ***Jay G. Mitchell.***

$500,000 Program For Lexington (Va.) Tel. Co.

THE LEXINGTON (Va.) Telephone Co. last month announced a half-million dollar development program which will bring Lexington exchange dial service by the latter part of 1956.

Mrs. Charles J. Augustine, company president, outlined the long-range program of improvements and expansion of the telephone system in Rockbridge County to the Lexington Town Council.

"The largest, single item," she said, "will be the conversion to dial operation of the Lexington exchange in the latter part of 1956. It is expected that the exchange will be 2200 lines and 3000 terminals and will include facilities for varied types of service which it has not been possible to offer the subscribers previously."

Mr. and Mrs. Augustine and Mrs. Augustine's parents, Mr. and Mrs. A. J. Smith, took over the Lexington and Natural Bridge Telephone Companies on Oct. 1, 1951. Since that time Buena Vista and Natural Bridge exchanges have been converted to dial operation and many Lexington rural lines have been replaced.

Shannon of Bell Lab's Receives Ballantine Medal

DR. CLAUDE E. SHANNON of the Mathematical Research Department of Bell Telephone Laboratories received the Stuart Ballantine Medal of the Franklin Institute at the annual medal day ceremonies of the Institute in Philadelphia on Oct. 19. Doctor Shannon was awarded the Morris Liebmann Memorial Prize of the Institute of Radio Engineers in 1949.

The citation accompanying the award read: — "In consideration of his recognition of communications as essentially a statistical process, his identification of the elements of communications systems with the appropriate statistical functions, and his welding of mathematical statistics into a comprehensive theory of communication which permits precise and rapid evaluation of proposed new communication systems, and points the way for significant new developments."

D. K. Carlson Heads Michigan Independents

■ GRAND RAPIDS, MICH. — More than 375 persons attended the 20th annual meeting of the Michigan Independent Telephone Association. Meeting at the Pantlind Hotel the conventioners participated in a two-day program that, according to Secretary F. B. Twigg, "was outstanding."

During the business session the Michigan Independents named D. K. Carlson, Morenci, president; Mr. Carlson is among the youngest men to hold such an office. He is vice president and general manager of the Morenci Telephone Co. and services, also, the West Ohio Telephone Co., Covington, Ohio.

Mr. Carlson is a graduate Electrical Engineer and a registered professional electrical engineer. He has been chairman of the Public Relations Committee which developed the booklet — "The Independent Telephone Industry Across Michigan" — and chairman of the Committee for District Meetings.

T. A. SAUNDERS, treasurer of Michigan Independent Telephone Association presents his report. In photo (l. to r.) are: Association President R. J. SCHAFER, Pinconning; MR. SAUNDERS; JOE LEOPOLD, convention speaker; and Association Secretary F. B. TWIGG, Lansing.

Other officers elected are: 1st Vice President L. W. Reynolds, president of the Ontonagon County Telephone Co., Ontonagon, Mich.; 2nd Vice President C. R. Smith, vice president of the Port Hope (Mich.) Tel. Co.; Treasurer T. A. Saunders, president, Union Telephone Co., Owosso; and Secretary F. B. Twigg, Lansing.

Directors of the Michigan association are: — L. H. Meyer, president, General Telephone Co., Muskegon; John Collver, president, Climax Telephone Co., Climax; L. L. Cook, manager, Bloomingdale Telephone Co., Bloomingdale; Mr. Saunders; C. R. Smith, vice president, Port Hope Telephone Co., Port Hope; J. R. Fox, president, Waldron Tel. Co., Waldron; K. B. Sage, vice president, manager, Traverse Bays Telephone Co., Central Lake; R. J. Schafer, president, Pinconning Telephone Co., Pinconning; John Sattler, vice president, manager, Leelanau Telephone Co., Cedar ; Mr. Reynolds; P. E. Taylor, vice president, manager, Pickford Telephone Co.; Pickford; and Mr. Carlson.

Speakers at the two-day meeting were: R. J. Schafer, 1954-55 president of the association; Mr. Saunders; Mr. Twigg; Joseph F. Leopold of the National Tax Equality Association; W. E. Elmer, commissioner, Michigan Public Service Commission; L. G. Conroy, general commer-

RETIRING MICHIGAN Association President, RUSS SCHAFER, turns over gavel to President-Elect DON CARLSON, Morenci.

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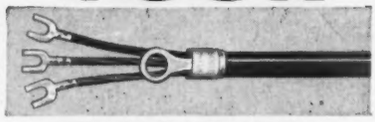

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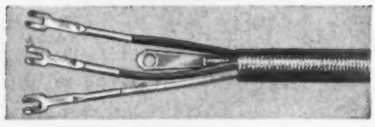

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MICHIGAN Convention Speaker WELDON CASE, Hudson, Ohio, addresses the Michigan convention. Seated at speakers' table are (left) AUSTIN SAUNDERS and LOU CONROY.

cial manager, Michigan Bell Telephone Co.; Weldon Case, vice president, Western Reserve Telephone Co., Hudson, Ohio; and R. C. Reno, editor, Telephony Publishing Corp., Chicago.

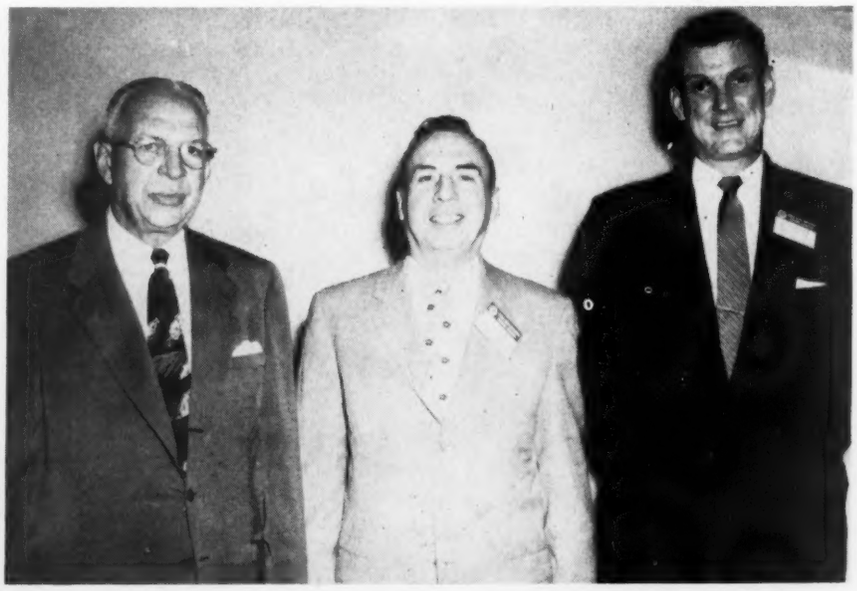
Carter Reelected Pres. Arkansas Tel. Assoc.

■ HOT SPRINGS, ARK. — The grand ballroom of the luxurious Arlington Hotel in Hot Springs was the scene of the meetings of the 33rd annual convention of the Arkansas Telephone Association September 26-27. Blessed by good weather the registration of over 300 represented telephone companies from every section of the state.

President John W. Carter of Smackover called the meeting to order and stressed the need for a strong legislative program in the state government and a close knit membership in the association.

P. A. Lasley of Little Rock, General Counsel of the Association, explained the four bills that became law since the last convention date.

The first such act is known as the



Members of the USITA convention group are (l. to r.) HUGH BARNHART, Rochester, Ind.; A. J. FALK, deputy director, Communications Division, BSDA, and GEORGE IRELAND, director of BSDA Communications Division, Washington, D. C.

"Bond Bill," he said. "The act changes the procedure before the Arkansas Public Service Commission for securing an increase in rates. Before the new law took effect, you could file a schedule with the commission proposing an increase in your rates indicating their effective date not less than 30 days after the filing. The rates took effect on the date indicated unless they were suspended by the commission. Then, notwithstanding the suspension, they could be put into effect as of the date indicated by the filing of a bond."

Mr. Lasley reported the new act provides that in instances where the commission suspends the rates, they cannot be put into effect under bond less than 120 days after the schedule was filed.

"The act carries what might be termed an emergency provision to the effect that if the utility contends that there exists an 'immediate and compelling necessity' for the rate increase," he said, "it may petition the commission setting forth the circumstances giving rise to such necessity and the commission must grant a hearing thereon within fifteen days. If the commission finds that the allegations of the petition are established, such increase as authorized by the commission may be then put into effect under bond and pending a final hearing."

Mr. Lasley stated the legislature attempted to regulate the use of party lines by passing Act 240.

"This act," he said, "makes it a misdemeanor for any person to refuse to relinquish his use of a party line when informed that property or human life are in jeopardy and that the prompt summoning of aid is necessary. It also makes it a misdemeanor for anyone to falsely state that a line is needed for emergency purposes. How this act may be enforced is questionable.

"There is one feature of the act that directly concerns all operators of telephone companies. The act requires that all telephone directories distributed after its effective date, June 9, 1955, shall contain a notice preceded by the word 'warning,' explaining the offense for refusing to yield the line or falsely requesting it. Any companies distributing directories without the notice are guilty of a misdemeanor . . ."

Mr. Lasley state Act 394 makes it unlawful (and subjects those who violate it to rather severe penalties) to intentionally destroy, injure, impair, or obstruct telephone, radio or television property or service or to use any such service or property for purposes other than those for which they were intended.

BOB FEGAN (left), Junction City, Kans., and WESLEY LOOMIS, III, Kansas City, Mo. at drawing for winners of personally signed Thomas Hart Benton prints. Drawing was held during recent USITA convention. Mrs. W. S. Taylor, Moscow, Idaho, won a set of four autographed prints.

"The act," he said, "carries a proviso that it does not apply to peaceful picketing or to the employes on strike for failure to report for work. The object of the act was to prevent jamming of telephones and nuisance calling . . ."

Referring to the cost of contacting poles of other utilities, Mr. Lasley stated, "a committee of your directors early in 1954 began negotiations with the Arkansas Power & Light Co. in an effort to work out a form of pole contact contract."

"The committee," he said, "with the aid of your legal department has now completed that work and each of you operating within the area of the Arkansas Power & Light Co. have received copies of a draft of this contract, both from your association and the power company. Along with the contract was enclosed a letter from your association attempting to explain its effect.

"You have noted that the contract is in two parts, one applying to rural areas defined as being those areas in which the power company has less than 1,000 customers. This is known as the rental contract and in such areas as are effected by this contract, the power company will own all the poles on which contacts are made or will be made. If you own any such poles in these areas, the power company will buy them. Under this contract, the company will pay to the power company 50¢ per contact for all poles in rural areas and in urban areas where the power company has 100 customers or less."

Mr. Lasley stated that "In urban areas where the power company has more than 100 customers, the cost of contact in these areas is graduated upward according to a formula in the contract. Contacts in the rural areas remain 50¢ irrespective of what is paid for those in urban areas."

The general contract applies to areas in which the power company has more than 1,000 customers and to such other areas as may be inserted in this contract. Under the general contract, the power company pays $4.50 for each contact on telephone company pole and the telephone company pays $3.00 for a contact on the power company pole. These prices apply to urban areas only. The general contract makes no reference to rural contact price. Therefore, it is necessary for those companies who wish to take advantage of the rural area 50¢ charge and are forced to, or voluntarily sign the general contract, to sign both contracts.

"Where you are forced to go under the general contract," he said, "it is to your advantage to own 40 per cent of the contacted poles. By doing so,

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the charge the power company makes you and you make the power company offset each other. To bring about this 40 per cent ratio, you may purchase poles of the power company or set your own joint use poles . . ."

B. Hollon Smith, vice president, Bankers National Life Insurance Co., Montclair, N. Y., told the Arkansas Independents, investor thinking in approaching telephone financing can be divided into several categories: (1) Management; (2) Consolidations; (3) Expansion of Plant and Facilities; (4) Adequate rates; and (5) Financing of Improvements.

"Maybe it is oversimplification to say that management is the most important one," he said. "There are many things that even good management cannot do. It has little control over rising costs; that is wages, modern installations, etc. However, it does have control over the relationships which these items have to operating revenues. If any are out of line, management's duty is to bring them into proper relationship. Or, if this is not possible, then to seek rate increases necessary to do so. In the final analysis, management will be judged by performance. An investor not only looks at the company's ability to service the debt promptly, but determines whether management is capable and efficient and whether it has the initiative to keep its plant modern and efficient, so that proper service is rendered to the public."

Stating that regional mergers and consolidations might be the answer to some of the problems, particularly where the companies are too small to afford adequate management, Mr. Smith said — "We have seen plenty of examples of enterprising individuals who have bought up several small Independents that had old regimes, grown tired on the job, too un-imaginative, too un-enthusiastic to re-organize, re-plan, re-finance and re-equip.

"I think," he said, "that the local owners and managers could join forces, put their stock and properties in a pot and take out proportionate stock in a consolidated company and then start to improve. Each local operating force could operate a good deal as before, but with the best man in the area as the supervising manager. It is necessary that owners get a bigger horizon than their own three to four hundred stations. I realize that local prides, jealousies and aloofness may prevent some of them from saving themselves and their local service by submitting to a regional boss. If some local owners cannot overcome this hurdle, then their companies will have to move along in an unattractive, un-financed, poorly equipped, discouraged and dreary way."

Mr. Smith emphasized that when these problems have been settled, "then you can begin to think of refinancing."

"Since it is almost impossible to estimate accurately an expansion program extending over a period of years," he said, "it is advisable to make short-term bank loans until the construction program is well underway and costs can be accurately determined."

The report of Association Presi-

Rocky Mountain Independents register for recent convention.

REA's E. C. WEITZELL addresses the 1955 convention of the Rocky Mountain Telephone Association.

dent, John W. Carter of Smackover, and an address by C. F. Byrns, Fort Smith, editor, Southwestern Publishing company, also were presented at the opening session.

During the morning session on Sept. 17, John Tyler Caldwell, president, University of Arkansas, Leon Roberts, USITA director of information, Washington, D. C., and Clyde McFarlin, Montezuma, Ia., addressed the convention.

A subscribers billing workshop was held Tuesday afternoon under the direction of J. D. Brewer, auditor, Western Arkansas Telephone Exchange, E. H. Garrison, Union Telephone Co. and W. W. Hutto, Southwestern Bell.

During the business meeting, John W. Carter, Smackover, was re-elected president. All of the present officers and board members were renominated and elected.

The officers include, in addition to Carter, H. R. Wilbourn, Conway, vice president; Mrs. Virginia Hirsch, Mountain Home, second vice president; J. D. Garrett, Lewisville, secretary-treasurer.

Board members renamed were: S. A. Lane, Russellville; R. L. Bankson, Little Rock; John Shaffer, Gentry; W. L. Bryant, Leachville; Carl Moore, Harrison; and T. B. Hollingsworth, Stuttgart.

Ward Blazzard Heads Rocky Mountain Assoc.

■ SALT LAKE CITY, UTAH: — Members of the Rocky Mountain Telephone Association, holding their 9th annual convention at the Hotel Utah, took a brief look back at the early history of their group and then set their sights on the task of bringing more and better service to the Rocky Mountain states.

Ward W. Blazzard, manager of the

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Kansas Woodland Telephone Co., Kamas, Utah, was elected president of the group. He succeeds C. M. Hart of the Citizens Utilities Co., Kingman, Ariz.

Other officers elected are: Vice President, Earle Crandall, manager, Pinedale (Wyo.) Telephone & Telegraph Co.; and Secretary-Treasurer, J. W. Baker, Coer d'Alene, Idaho.

Directors of the Rocky Mountain Association are: Mr. Baker; C. A. Blakeney, General Telephone Co. of the Southwest, Carlsbad, N. M.; Mr. Blazzard; Robert Brown, Parma (Idaho) Telephone Company; Rulon Callister, Millard County Telephone & Telegraph Co., Delta, Utah; T. Clark Callister, Millard County Telephone & Telegraph Co., Fillmore, Utah; J. W. Corbin, Midland Telephone Company, Moab, Utah; Mr. Crandall; C. W. Haas, Big Timber (Mont.) Home Telephone Co.; C. M. Hart, Citizens Utilities Co., Kingman, Ariz.; R. A. Manuel, Browning Telephone Co., Browning, Mont.; D. A. McLean, The Mountain States Telephone & Telegraph Co., Denver, Colo.; J. F. Monsen, Aberdeen (Idaho) Telephone Co.; Floyd L. Reyher, Haxtun (Colo.) Telephone Co.; J. F. Thiele, Pagosa Springs (Colo.) Telephone Co.; J. E. Tipton, Espanola (N. M.) Telephone Co.; and M. O. Trego, Mona Short Line Telephone Co., Sundance, Wyo.

Members of the Executive Committee are: Messrs. Blazzard, Crandall, Hart, McLean, and Baker.

Speakers at the 2-day meeting were: C. M. Hart, 1954-1955 president of the Rocky Mountain Telephone Association; C. W. Haas, Big Timber, Montana; Leon Roberts, director of information, United States Independent Telephone Association, Washington, D. C.; Everett C. Weitzel, chief of Telephone Operations & Loan Division, REA, Washington, D. C.; Walter G. Wright, president, General Telephone Co. of the Southwest, San Angelo, Texas; L. V. Smith, Arizona general manager, Mountain States Tel. & Tel. Co.

REA's Telephone Program

MR. WEITZEL told the Rocky Mountain Independents that suitable and adequate sources of capital are perhaps the most essential requirements of today.

"The provision of equity capital," he said, "is a handicap which many companies are not able to overcome. Every company must consider the carrying charges, including the interest and amortization of its debt capital. Commitment fees and the costs for legal, engineering and accounting services are other important factors in a decision as to whether a particular source of capital is adequate and suitable. All too frequently, Independent companies are being talked into financial arrangements which they eventually, and to their dismay, learn that they cannot handle. It is also unfortunate that numerous companies are being encouraged to obligate themselves for a part of their needs without any provision for taking care of their total capital requirements."

Emphasizing that most companies serving the smaller towns and rural areas simply do not have the margins necessary to handle debt service on which the carrying charges amount to 12 or 13 percent, or more, Mr. Weitzel warned — "If the Independent companies are to survive, they must have longer-term, lower-cost financing than has been available from the usual sources."

"Equally important," he said, "is

C. W. HAAS addressing Rocky Mountain convention. On left is C. H. HART, 1954-55 president of Rocky Mountain Telephone Association, and on right is LEON ROBERTS, USITA director of information, Washington, D. C.

the fact that owners of Independent companies do not want to involve themselves in financial arrangements that would destroy their control and management of the companies which they have worked so hard to build and develop. In keeping with tradition, the Independent companies want to stay independent, and it should be possible to provide adequate, low-cost, long-term financing in keeping with this tradition . . ."

Mr. Weitzel reported that REA is always "looking and listening for more practical and effective answers to the many questions that face the Independent telephone companies and cooperatives."

"In addition to financing," he said, "the needs vary widely. Improved and more efficient management is an essential in many instances. Adequate rates are requisite to a prosperous and healthy telephony industry. Improvements in connecting company agreements are necessary and desirable in numerous instances. Good records and accounting are requisite to the attainment of all of these objectives. These are all a part of management. Financing is only one of the assists that must be provided if the industry is to remain strong and to grow stronger as the years go by."

Public Relations

STATING that the purpose of a public relations program is to build, during years of smooth operations, a reservoir of good will which can be tapped when rough years come along, Mr. Smith said — "This compares exactly with a financial policy which calls for storing up a 'rainy day' surplus during years of prosperity."

Mr. Smith went on to discuss the importance of and the means of business maintaining good relations with 16 distinct segments of the public-at-large. His groupings were employes, investors, directors, tradesmen, suppliers, customers, debtors, the general public, the press, schools, churches, other non-profit organizations, communities, the armed services, domestic governments and foreign peoples and governments.

He pointed out that most individuals find themselves, at various times, belonging to more than one of these groups, but that their reactions will vary in accordance with the basic interests of the groups.

"For this reason a good public relations program must contain different approaches to the different segments of people. Hence, in developing a program, it is helpful to be continually aware of these 'publics' within the public," Mr. Smith said.

He concluded with the thought that business has no choice as to whether public relations is or is not one of its problems. "It is and always will be a management problem," he said. "Management does have a choice, though, as to whether those relations shall be good or bad, and if a business is to survive, it had better choose the former," he concluded.

Rocky Mountain Association President C. M. HART (left) and Speaker WALTER G. WRIGHT, president General Tel. Co. of the S. W.

Selling

MR. WRIGHT pointed out that — "We should sell because it is our business obligation to do so."

"This is true," he said, "because selling provides additional revenue and every business is searching for means to obtain additional revenue and this industry is no exception. It is only good business to sell and since our need for additional revenue is continuing, I believe we have a business obligation to get out and do something about it. . . "

Mr. Wright emphasized his belief that — "We have a moral obligation to the public to use every available means at our disposal to improve our situation before appealing to the rate making body."

"If we are sold on these obligations to sell," he said, "Then we are in a position to begin selling our people on their obligation to support the sale of our product — the services should then sell themselves."

In closing, Mr. Wright referred to the Bell System's sales and research programs.

"The Bell System advertisements which appear in major national magazines," he said, "have been plugging increased toll usage, extensions and other special services and equipments. These ads are read by our customers too, and it's up to us to take advantage of this sales advertising on the part of the Bell System to turn it into sales in our company areas . . ."

The reports of President Hart and Secretary-Treasurer Baker reviewed accomplishments of the association during the past year. According to Mr. Baker the members had co-operated in every way possible to make the organization a worthwhile one; the directors had taken an active part in securing new members in the association; and a number of the member companies had completed, or nearly completed improvements in their expansion-improvement projects.

N.E.T. & T. Plans $560,000 Cable Carrier Project

PLANS FOR a $560,000 cable carrier installation program to supplement existing facilities between various central offices in Maine, New Hampshire, Vermont, Massachusetts and Rhode Island, principally to furnish necessary circuits for the "Centralized Automatic Message Accounting Tandem System" scheduled for operation at Boston in 1957, were filed with the FCC last month by the New England Telephone & Telegraph Co.

N.E.T. & T. said existing cables and carrier systems are at present working at a high rate of capacity and "relief is required." The new project will provide 360 channels of telephone communication totaling about 22,400 channel miles.

Dr. James B. Fisk Heads Task Force

DR. JAMES B. FISK, executive vice president of the Bell Telephone Laboratories, has been appointed to head a communications task force on international inspection and control of armaments, Presidential Assistant Harold Stassen, in charge of disarmament, announced last month.

Dr. Fisk will be in charge of a task force to design "rapid, continuous, reliable communications, without interference, necessary to implement an international inspection and reporting system."

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Anaconda Announces New Line of Wires & Cables

A NEW LINE of telephone wires and cables has been announced by the Anaconda Wire & Cable Co., New York, N. Y. The line includes aerial and duct cables, direct burial cables, self-supporting cables, and rural and urban distribution wire.

According to Anaconda, all but one of the cables are insulated with polyethylene, which has exceptional electrical characteristics that contribute to minimum transmission loss. The urban distribution wire is insulated with polyvinyl chloride. The entire line of cables is color-coded.

The Type ATC-AD aerial and duct cables are recommended for telephone exchange areas, rural and suburban communities, railroad communications systems and replacement of open-wire installations. They are easy and economical to install and require much lighter messengers than are generally used.

The direct-burial cables, Type ATC-DB, are designed for direct burial in any region and are durable and long-lasting under adverse soil conditions. They are also suitable for application adjacent to power circuits because of their high dielectric strength and low shield resistance.

Stromberg-Carlson Names New Sales Representatives

JOSEPH C. FERRO, Kenneth R. Jenkins, and Daniel E. Monaghan have been appointed telephone sales representatives by Stromberg-Carlson, a division of General Dynamics Corp., according to T. C. Thompson, telephone sales manager. The three men will sell and service Stromberg-Carlson equipment and supplies in the East, Central and Western United States respectively.

Mr. Ferro began his telephone career with a correspondence school diploma in electrical engineering and sales management; traveled to China to act as wire shief of the First Chinese Army; spent three years in the U. S. Army Signal Corps and did telephone work for Western Electric Co. from coast to coast. He was an installer and plant man for General Telephone Co. of the Southwest before joining Stromberg-Carlson Co. in 1951. His experience

J. C. FERRO

at Stromberg-Carlson includes instructing in XY Training School and work in the telephone engineering and national sales engineering departments. With his appointment as sales representative, Mr. Ferro will travel the New York and New England area, making his headquarters in Rochester, N. Y.

Mr. Jenkins started working for his father, who is manager of the Oswago River Telephone Co. in his home town of Shinglehouse, Pa. Between terms as a Marine, he worked for Stromberg-Carlson in 1950, returning in 1952 to join the installation department, where he was promoted to foreman on several XY dial jobs in Tennessee. He will be serving Independent telephone companies in southern Indiana, Tennessee and Kentucky and will base his operations from Seymour, Ind.

K. R. JENKINS

Mr. Monaghan also began his career working in his local telephone company, the Pacific Telephone & Telegraph Co., Alhambra, Calif. He spent a year with Stromberg-Carlson in 1949, which was interrupted by a tour of Army duty in the Far East and service here in the United States. He returned to Stromberg-Carlson in 1952 as an installation foreman. His recent appoint sends him to Nevada, Utah and Northern California as telephone sales representative, working from his home in North Sacramento, Calif.

D. E. MONAGHAN

James L. Robb Elected Vice Pres. Superior Cable

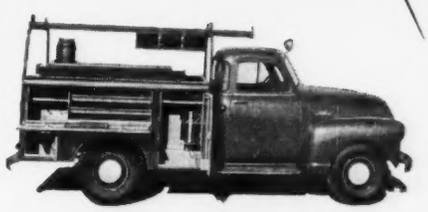
THE ELECTION of James L. Robb to vice president and a director of Superior Cable Corp., Hickory, N. C., has been announced by Walker Geitner, president of the corporation. Mr. Robb has been with Superior Cable in charge of engineering since the company began operations a little over a year ago. An electrical engineering graduate of George Washington University, Mr. Robb was plant engineer

J. L. ROBB

Please Turn To Page 108

POWERS American

CABLE SPLICERS' WORKSHOP



Here's a cable splicers' body that's always ready for work—routine or emergency. It's the compact Series 44-CS-90 Body . . . designed for action . . . equipped to carry everything needed on any job. Here's a 90″ workshop that's a cable splicer's dream come true. Why not put it to work in your operation?

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A copy of information-packed Bulletin No. 120, complete with prices, will be sent on request—without obligation.

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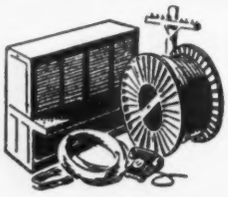
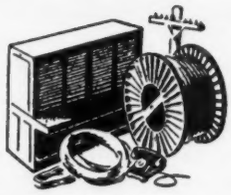




Earth Auger

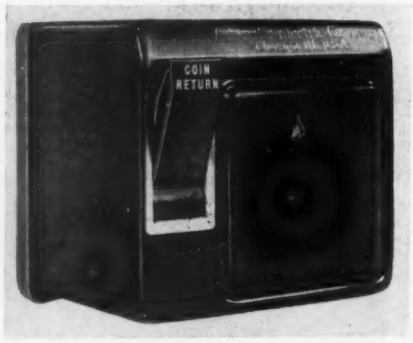
A NEW STYLE earth auger for boring holes for guy anchors and other line construction is now being manufactured by the A. B. Chance Co., Centralia, Mo. The auger is heavily constructed to withstand the rough treatment augers receive on a line truck. The new auger has a tripping mechanism so that the dirt can be easily dumped from the blades. The steel blades have sharpened cutting edges for boring into the earth. Small roots and other obstructions are cut through by the blades. A reamer extension blade adjusts so that several sizes of holes can be drilled using the same auger. Chance Earth Augers have telescoping handles for digging holes up to 12 feet deep.—For complete information. ***Check New Product* 871.**

Coin Receptacle

AN ANTI-STUFFING coin receptacle designed to put an end to return chute stuffing, is now being manufactured for the Independent telephone industry by Automatic Electric Co.

The new device consists of a metal "pocket" that rests directly beneath the coin refund chute. When money is refunded coin or coins slide into the pocket. Then by by a simple motion of the finger, the user can tilt the pocket forward to retrieve returned coins.

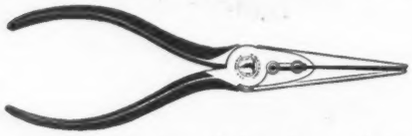
The opening of the coin-refund chute is blocked by the back of the



"pocket," making it inaccessible to a paystation user, and therefore impossible to stuff anything into the coin return. — For complete data. ***Check New Product* 872.**

Needle-Nose Plier

MATHIAS KLEIN & SONS has announced the introduction of a new needle-nose plier for the telephone and electronics field. This plier has a long, pointed nose for reaching into confined space and also has cutters. Two



special stripping holes have been been added in the cutting blade -- for skinning 19 and 22 gauge synthetic coated wire. Cat. No. 203-6-H2.

A folder on this tool together with prices may be obtained by ***Checking New Product* 873.**

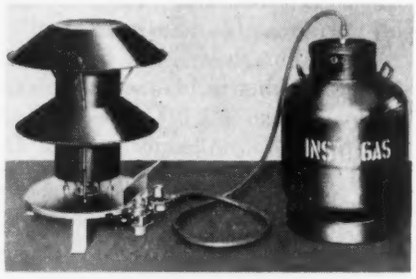
Salamander

AN ADDITION to its line of "Insto-Hot" Salamanders is now available from the Insto-Gas Corp., Detroit, Mich.

The new No. 1415 Salamander is equipped with a 100 per cent Safety Shutoff and Pilot Light (AGA Approved Controls) and supplements the No. 1405 and No. 1410 Salamanders to provide the right Salamander for any type job.

The manufacturer states one of the many advantages of the new No. 1415 is a pressure regulator mounted on the Salamander which makes it unnecessary to have cylinder nearby. Perfect operation with over 50-ft. of hose is assured.

The No. 1415 also has an advanced burner design that provides complete



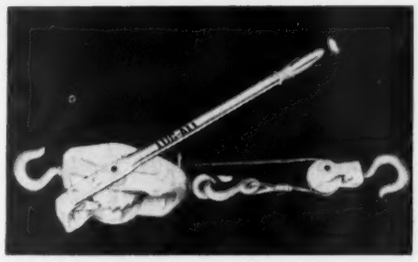
combustion and quiet operation. Like the No. 1405 and No. 1410 Salamanders, the No. 1415 has engineered heat distribution plus a secondary heat reflector skirt that radiates heat upward — where it is needed. The No. 1415 has a BTU input of 100,000 BTU per hour. The No. 1415 is shipped completely assembled — ready for instant use without adjustment.

Insto-Gas Corporation recommends its unique No. 35 Cylinder for use with all three "Insto-Hot" Salamanders.—For complete data, ***Check New Product* 874.**

Lug-All Winch-Hoist

THE LUG-ALL CO., Haverford, Pa. now offers a new lightweight 2 ton winch-hoist with 20-ft. of cable that fulfills a longstanding need. It lifts. lowers or pulls 2 tons a distance of 10 ft. when used double cable (as shown), or handles 1 ton a distance of 20 ft. when used single cable.

This new Lug-All weighs only 15 lbs. and includes these outstanding features: a rugged, protective type main frame of high grade aluminum alloys that allows instant inspection



and easy cleaning, oiled-for-life bearings, stainless steel springs, three workable hooks, smooth operation in any position and a built-in pulley that can be used as a "snatch block" in close quarter work.

Safety is assured — the "safety handle" bends before the unit can be overloaded to prevent costly accidents. An interlocking pawl system securely locks the load. There are no brakes to slip! Free release only operates under no load conditions.

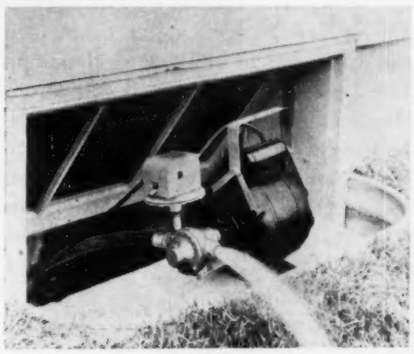
A tamperproof set-up can be obtained by simply removing the reversible handle.

All units are factory tested to 100% overload and are guaranteed for one year against defective parts and/or workmanship.—For complete data, ***Check New Product* 875.**

Portable Pump

DESIGNED TO combat flooded floors, standing water on flat roofs and for quick, emergency use all year long is a lightweight portable pump built by Hypro Engineering, Inc., Minneapolis, and equipped with a vacuum switch that permits untended operation.

Weighing only 26 pounds complete with motor, hinged carrying handle and vacuum switch, the Hypro Portable has a capacity of up to 5 gallons per minute with pressures up to 30 pounds. The manufacturer reports



that the unit can be easily moved from one spot to another within industrial plants whenever fast water transfer is required. The special vacuum switch guards against burned out impellers by stopping the pump's motor automatically when the liquid supply runs dry.

Handling either clean or dirty water with a minimum of clogging, the Portable will lift water up to 10 feet unprimed or 22 feet primed and has outside threaded ports for standard female garden hose couplings.

Motor on the Portable is ¼ H.P., 110-volt, heavy duty capacitor type with manual reset overload protector and a 5-foot cord. For additional details, ***Check New Product* 876.**

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BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias, 7200 McCormick Rd., Chicago 45, Ill.*—[ADV. 3]

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BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 5]

CABLE, All Plastic, *Aerial, Duct, Direct Burial, PBX, Switchboard. — The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 6]

CORDS, Switchboard (with or without plugs), Instrument (retractable and regular) and Operators — *Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 7]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 8]

FURNACES — **For quickly and economically melting lead and paraffin** — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif*—[ADV. 9]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 10]

LIGHTWEIGHT PULLERS — *Coffing Hoist Company, 800 Walters St., Danville 5, Ill.* — [ADV. 11]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 12)]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.* —[ADV. 13]

POLES, Southern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P. O. Box 23. Pineville, La.*—[ADV. 14]

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.*—[ADV. 15]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 16]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 17]

REBUILT TELEPHONE & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 26, Ill.*—[ADV. 18]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 19]

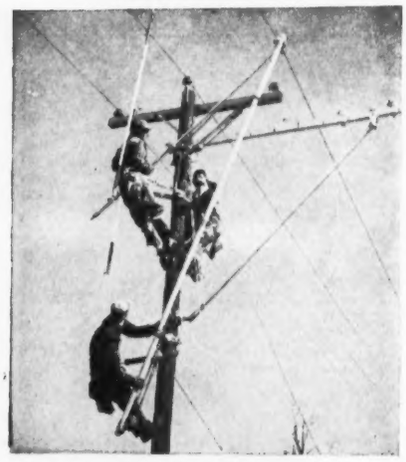
WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 20]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 21]

WIRE, Telephone, for all inside and outside uses — *Whitney Blake Co., New Haven, Conn.*—[ADV. 22]

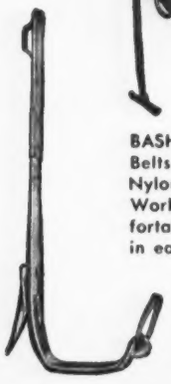
Bashlin's Quality

FOR OVER 30 YEARS



TOOLS OF SAFETY . . .

BASHLIN Quality Body Belts with the additional Nylon Safety Feature . . . Work Safely . . . Comfortably . . . with tools in easy reach.



BASHLIN Quality Alcoa Aluminum Alloy Adjustable Climbers with replaceable gaffs . . . There is nothing better anywhere!

BASHLIN'S Nylon and leather Safety Straps . . . Bashlin Quality, of course.

You Can't Afford Anything LESS Than the BEST—

Buy **BASHLIN**

Highest Quality For Over 30 Years

Distributors in Strategic Areas in U.S.A.

EXPORT: Copperweld Steel International Co.
IN CANADA: Bell Electricord & Safety, Ltd., Toronto

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CATALOG NO. 55

W. M. BASHLIN CO.
GROVE CITY, PA.

with the New York Telephone Company and assistant chief engineer with the R.E.A. in Washington, D. C. prior to joining Superior Cable Corporation.

IBM Names Hollenkamp Mgr. Communications Dept.

INTERNATIONAL Business Machines Corp., New York City, has announced the appointment of W. J. Hollenkamp to manager of the communications department. In his new post Mr. Hollenkamp will be in charge of planning applications of IBM equipment to meet the accounting requirements of firms in the communications field. He was formerly a special representative in the department.

Mr. Hollenkamp joined IBM in 1945 in Los Angeles. He was assigned to the communications department in 1952.

North Electric to Distribute Telefon Fabrik Plugs

TELEFON FABRIK AUTOMATIC A/S has announced the appointment of North Electric Co., Galion, Ohio, as its exclusive national distributor in the United States for Telefon Fabrik Automatic Switchboard Plugs.

According to Telefon Fabrik, the wide acceptance accorded its complete line of quality plugs has made it necessary to centralize distribution efforts in the United States with an organization well established in the telephone industry and having nation-wide sales facilities.

The Buckeye Telephone & Supply Co., 1250 Kinnear Road, Columbus 8, Ohio, and the Suttle Equipment Co., Lawrenceville, Ill., will continue to serve their customers as dealers for Telefon Fabrik Automatic Plugs as in the past, with the added advantage of support from the conveniently located nation-wide distributor.

Stromberg-Carlson Announces $5,000,000 Plant Expansion

WORK STARTED this month on a five-million-dollar expansion program at the main plant and offices of the Stromberg-Carlson Co., Rochester, N. Y., a division of General Dynamics Corp. The program will add more than a quarter of a million square feet of floor space to the firm's office, laboratory and manufacturing facilities, Mr. Tait said.

The new building will adjoin the north side of the present Stromberg-Carlson main plant in Carlson Road, occupying space now used for employe parking and for a recreation area.

The building will be a two-story structure of brick, steel and reinforced concrete construction. It will be divided into three main sections: (1) An Administration and Research

LAST MONTH, division sales managers of the General Telephone Directory Co., Des Plaines, Ill., attended a Managers' Conference at the Blackstone Hotel, Chicago. Seated (L to R): — DAVID B. SIMPSON, Springfield, Ill.; OWEN D. STAYNER, Erie, Pa.; JOHN D. O'NEIL, Des Plaines, Ill.; LAWRENCE A. BUCKLAND, Madison, Wis.; and O. R. STIGALL, Lafayette, Ind. Standing (L to R): — WARREN J. MURPHY, Des Plaines, Ill.; DONALD F. BRIGGS, San Angelo, Texas; JACK T. WARD, Spokane, Wash.; EDWARD T. JORDAN, Long Beach, Calif.; WARREN A. ROLPH, Des Plaines, Ill.; EVERETT N. MORNINGSTAR, Des Plaines, Ill.; LELAND J. MAST, Des Plaines, Ill.; and J. PAUL ROSSITER, Lexington, Ky. Guest speakers were: Al Palmer, assistant sales training supervisor, Ohio Bell Telephone Co., and John Patton, president, John A. Patton Engineers, Inc.

Building, providing more than 100,000 square feet of space for executive and general offices, and electronic research laboratories; (2) a kitchen and cafeteria section, which also will contain an executive's dining room, and will provide office space on the ground floor; and (3) a factory building providing approximately 110,000 square feet for enlarged production facilities.

R. M. Carmen Joins Kellogg Switchboard

THE APPOINTMENT of R. M. Carmen as sales representative for Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., has been announced by O. C. Bailey, assistant sales manager. Mr. Carmen, a 17-year veteran in the telephone field, started his telephone career with the J. H. McNutt Telephone Construction Co., Cygnet, Ohio, and for nine years he worked in all departments of the plant of the Northwestern Telephone Co., Defiance, Ohio. His most recent position was with the W. T. King, Inc., telephone consultants and engineers. He was elected vice president of this concern in 1954.

R. M. CARMEN

Mr. Carmen will work under the direction of C. E. Brown, manager of the Central Division. His territory will be northwestern Ohio and the entire State of Michigan, with the exception of the Upper Peninsula, with headquarters at the Kellogg Branch Office and Warehouse at Mansfield, Ohio.

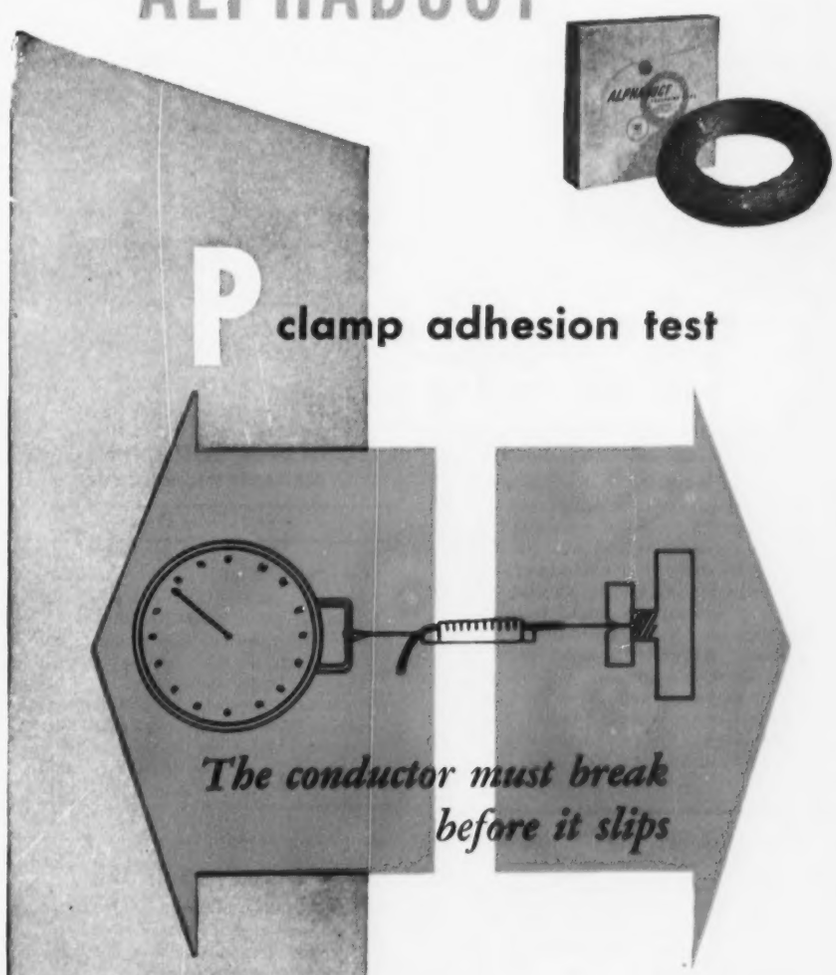
Raytheon Reorganizes Its Equipment Operations

A MAJOR reorganization of the Equipment Operations of Raytheon Manufacturing Co. was announced last month by D. R. Hull, vice president and general manager of the Operations.

According to Mr. Hull, the changes are being made to facilitate a further expansion of the Waltham, Mass., electronics firm's commercial product activities as well as its many military projects. He said that in order to do this, two new integrated organizations have been established; one responsible for commercial equipment and the other for government equip-

Please Turn To Page 112

ALPHADUCT



P clamps are the most widely used method of attaching drop wire to buildings. Lest you may worry about a P clamp causing slipping of the insulation or jacket on Alphaduct Neoprene Jacketed Drop Wire — read about this Alphaduct service test. This test is made daily.

A sample of Alphaduct wire is inserted in a P clamp with 12 inches of the wire projecting from the top of the clamp. The bail of the clamp is then inserted in the upper jaws of a tensile testing machine, and the end of the wire is stripped free of jacket and insulation and inserted in the other end of the machine.

The jaws of the machine are then gradually separated until the conductor breaks. The conductor must break before there is ANY slipping of either the jacket or the insulation.

Don't have any worries about a little old P clamp hurting ALPHADUCT drop wire. Try Alphaduct. It's dated by a color coded thread so you can see for yourself how long it lasts, how much money it saves.

ALPHADUCT WIRE AND CABLE COMPANY • MILLTOWN, NEW JERSEY
NATIONAL DISTRIBUTORS • LEICH SALES CORPORATION, CHICAGO, ILLINOIS
REGIONAL DISTRIBUTORS • PANKEY SUPPLY CO., CHARLOTTESVILLE, VA.
THE LINDSAY TELEPHONE SUPPLY CO., CLEVELAND, OHIO

EMPLOYEES
POSITIONS
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FOR SALE
OPPORTUNITY
EQUIPMENT

Published in each issue of Telephone Engineer & Management. Advertising forms close on 1st of month. Rates 15 cents a word except for Situation Wanted ads, which are only 10 cents per word. In figuring cost of ads, count each word of address in number of words used. All ads payable in advance. Minimum charge—$2.00. Special rates for display ads on request. Send copy and box number replies to Telephone Engineer Publ-ishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.

HELP WANTED

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced man needed. Steady work, good pay. Henkels & McCoy, 6100 N. 20th, Philadelphia, Pa.

HELP WANTED: — Journeyman Station Installers and Troublemen for growing Florida company for permanent employment. Write Inter-County Telephone & Telegraph Co., Box 390, Fort Myers, Florida.

Manager Wanted: — for medium-sized REA financed telephone system, located in Southwestern Wisconsin. Existing system will be converted to three dial exchanges. Applicants qualifications should include a substantial background in the various phases of telephone operations. Inquiries should include a general outline of experience, salary expected and date of availability. Write: Joseph Linrud, President, Coon Valley Farmers Telephone Company, Coon Valley, Wisconsin.

"OUTSIDE PLANT ENGINEER by large independent Telephone Company in New York State. Must be experienced in all phases of outside plant engineering." Reply Box 8990 Telephone Engineer Publishing Corp. 7720 N. Sheridan Rd., Chicago 26, Illinois.

POSITION WANTED: — Supervisory position with communication company in inside plant engineering, installation, and maintenance. 3 years experience in this capacity, BSEE. Experienced with 2 way radio. Prefer location in south or west. Box 8992, Telephone Engineer Publ. Corp., 7720 Sheridan Rd., Chicago, Ill.

WANTED TO BUY

WANTED TO BUY NOW: — Individual owner wants to buy telephone company, usual or medium size, with or without present management. Write today, Box No. 8951, Telephone Engineer Publishing Corp., 7720 Sheridan Rd., Chicago, Ill.

WANTED TO BUY — Two (2) Stromberg-Carlson super-service switchboard positions. Telephone L.D. 20, Portsmouth, Ohio. OHIO CONSOLIDATED TELEPHONE COMPANY.

FOR SALE

Reconditioned Stromberg-Carlson 1248 W Magneto desk sets Strong Alnico generator easily converted from magneto to common battery or dial operation. Shipped on approval.

Price .....$19.50 each
12 or more .....$18.50 each

BOHNSACK EQUIPMENT CO.
GERMANTOWN, NEW YORK

For Sale:—Eighty line Stromberg magneto board, main frame, subcycle, rectifier and 100 86A Leich magneto phones, all in good condition, all bought new after 1948. Also, a large assortment of other types of magneto phone and ringer boxes. Would prefer to sell the entire lot. Make me an offer. Northern Telephone Co., Hale, Michigan.

FOR SALE

Kellogg Common Battery Switchboard
300 Local Common Battery Lines
20 Rural or Local Common Battery Lines
20 Rural Magneto Lines
Sub-Cycle Ringer
24 Volt Batteries (Good)
Main Frame
Relay Rack
Rectifier Charger

Price $1,200.00 — AVAILABLE NOW

FIDELITY TELEPHONE COMPANY
48 West Euclid Street, Sullivan, Missouri

FOR SALE — Switchboard W. E. Co. #551 equipt with 40 C. B., 20-magneto, 10 cord and 3 dial trunk circuits. Perfect condition. Price $349.00 F. O. B. Chicago. Line Equipment Sales, 529 S. Dearborn St., Chicago 5, Illinois.

RECONDITIONED EQUIPMENT

W. E. #202 Desk type hand set, W/E1 - Hand units, 3 Cond. Cords. @ $8.75 ea.
W. E. — E1 — Hand Units Only, 3 Cond. Cord. @ $3.00 ea.
Conn. Elect. Hand Units, 4 Cond. Cords, Capsule Receiver, & Transmitters. @ $4.00 ea.
SUbcycle, Model M. 7.5-60 @ $25.00 ea.

Prices are F.O.B. Chicago

INDEPENDENT TELEPHONE REPAIR CO.
2137 West 21st St. Chicago 8, Ill.

SPECIFY **TELERING** for

Dependable and Economical Telephone Ringing Power Equipment.

Engineered for complete satisfaction.

Manufactured by

TELKOR, INC. Elyria, Ohio

FOR SALE

W.E. 592 extension ringers-New	$ 7.50
W.E. 392 extension gongs with condensers	8.50
W.E. 98A station protectors with fuses and carbon blocks	.75
W.E. 398-A operators headsets—New	10.50
Reconditioned	6.00
W.E. F1AW3 Handsets with cord—New	6.00
W.E. 1A battery boxes—3 cell—New	1.10
Federal 804A magneto compact wall or desk set, strong Alnico generator, reconditioned	19.50
St. Carlson 1444 desk set, blank for dial—late model. Requires C. B. or magneto ringer box—like new	10.50
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Army cable splicers platforms with corner eye bolts and buy lines	14.00

Shipped on approval

Bohnsack Equipment Company
Germantown, New York

CABLE-SPLICERS' WIPING CLOTHS

WIPING THE VERTICAL JOINT

Showing the up-right cloth in action.

Formed-flexible finishing cloths (Patented); Flat finishing cloths; Catch cloths; Crotch cloths and Up-right joint catch cloths. Made of world-prize HERRINGBONE TICKING or imported English MOLESKIN. If your jobber cannot supply you write us for literature and prices.

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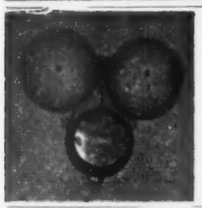
3035 ALDRICH AVENUE, MINNEAPOLIS, MINN.



Rebuilt, Refinished
Loud ringing bells. 1000 or 2500 Ohm @ $8.00 each. With Condensers @ $9.00 Each.
F.O.B. Chicago, Ill.
INDEPENDENT TELEPHONE REPAIR CO.
2137 W. 21st St
Chicago 8, Illinois

FOR MAGNETO SWITCHBOARDS

W. E. #22-C Combined Jacks and Signals on #89-B Mounting (5 per strip) *NEW*
S. C. #350-B Combined Key and Supervisory Drop Assembly (Replaces #169-F Key) *NEW*
Federal #804-A Magneto Handsets for Desk or Wall Mounting—*RECONDITIONED*

BUCKEYE
TELEPHONE & SUPPLY CO.
1250 Kinnear Road Columbus 21, Ohio
HUdson 8-0655

Statement of the Ownership, Management and Circulation Required by the Acts of Congress of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) Showing the Ownership, Management, and Circulation of Telephone Engineer & Management, published monthly at Rochelle, Illinois, for October 1, 1955.

1. The names and addresses of the publisher, editor, managing editor and business managers are:
Publisher—Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago, Ill.
Editor—Ray W. Smith, 7720 Sheridan Road, Chicago, Ill.
Managing Editor—John G. Reynolds, 7720 Sheridan Road, Chicago, Ill.
Business Managers, Ray W. & Roy F. Smith, 7720 Sheridan Road, Chicago, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)
Telephone Engineer Publishing Corporation, 7720 Sheridan Road, Chicago 26, Ill.
Ray W. Smith, 7720 Sheridan Road, Chicago 26, Ill.
Roy W. Smith, 7720 Sheridan Road, Chicago 26, Ill.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: **(If there are none, so state.)**
Ray W. Smith, 7720 Sheridan Road, Chicago 26, Ill.
Roy F. Smith, 7720 Sheridan Road, Chicago 26, Ill.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

Sworn to and subscribed before me this 13th day of September, 1955.
Ray W. Smith, Editor
Earl F. Foster, Notary Public
(My commission expires June 15, 1958)

PART 2 JUST PRINTED . . .

"Stability in Carrier Frequency Oscillators"

Sherman B. Weiner, Carrier Engineer, completes, in the November issue of "The Carrier," his discussion begun in the October number.

This handy-size (5½" x 8½") pamphlet contains 8 pages, generously illustrated. It is of special interest to operating company engineers and technicians whose daily work is concerned with the principles of carrier.

Copies have been distributed to a known list of such technical men. If you haven't received one, send a postcard request to your nearest Stromberg-Carlson branch office. We also have a few remaining copies of the October issue, obtainable while they last.

STROMBERG-CARLSON COMPANY
A DIVISION OF GENERAL DYNAMICS CORPORATION
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TEST EQUIPMENT

Locates Line Trouble Fast

LINEMAN'S TEST SET ..... (Model H)
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EXPLORING COIL AMPLIFIER (Model E)
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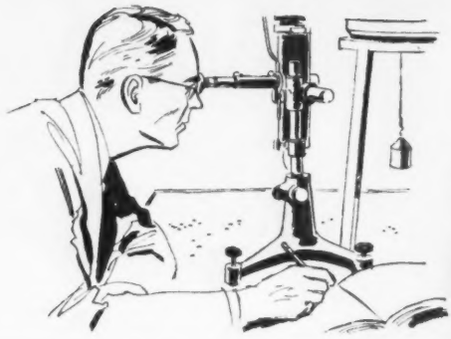
The "All-American" Putting Game

Improve your putting. Get live action and Putting Practice THAT IS FUN in your own living room.
For a quiet evening at home, or to liven up any party "Parlar Putt" is the game of games. Appeals to all ages. Children, grown-ups or mixed groups of golfers and non-golfers. For competitive challenge and exciting fun you cannot go wrong with Parlar Putt.
Complete with colored balls, cups and weighted wickets (you of course will prefer your own putter). Parlar Putt is only $9.95, delivered to your address, anywhere in continental U. S. A.

DAN McNULTY, 1760 Lunt Ave., Chicago 26, Ill.

RESEARCH



Behind today's Armstrong Glass Insulators lie many years of glass-making research. This continuing program is your guarantee of insulators as good as science can make them. For complete details, write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, N. Y.

Armstrong GLASS INSULATORS

for communications . . . for power

It's the "Cat's Meow"

For ELIMINATING Service Calls!

Lorain HOWLER

You wouldn't think a cat's "meow" could decrease your service calls, but the Lorain Howler, which produces a signal tone very similar to a cat's "meow", does just that! Should your subscriber leave his receiver off the hook, the Lorain Howler will start its "meow" and will continue until the subscriber locates the source of the noise and replaces the receiver, restoring the line to service.

WRITE FOR BULLETIN 167

LORAIN PRODUCTS CORPORATION
1122 F ST. • LORAIN, OHIO

(Concluded From Page 109)

ment. In order to strengthen both spheres of activity, each will have its own engineering and development facilities.

Two new positions created by the change have been filled by John H. Beedle as manager of commercial equipment, and Gordon S. Humphrey as manager of government equipment. Each man has had more than a dozen years' service with the company, and each reports directly to Mr. Hull.

The commercial equipment organization is made up of four departments: (1) Commercial engineering, a new unit headed by N. B. Nichols, an outstanding authority on servomechanisms and automatic controls, who has been manager of the firm's research division; (2) commercial manufacturing, a new unit headed by J. Glasser, who was production manager of equipment manufacturing; (3) transformer plant, to continue under the direction of K. W. Gordon; and (4) commercial marketing, under D. J. Webster, its present manager.

Coming under the government equipment organization will be Wayland engineering, headed by F. A. Gross; Chicago engineering, headed by H. N. Beveridge; and Government manufacturing, headed by William Lightfoot, former assistant works manager of equipment manufacturing.

The new government equipment organization does not affect the firm's missile and radar division, under the direction of D. D. Coffin. The missile and radar development laboratory is in a new building overlooking Hanscom Air Force Base in Bedford, Mass., while its production facilities are in South Lowell, Mass.

The government contracts division, in Waltham, will continue under the direction of A. A. Farrar, but now serves both the government equipment and the missile and radar groups.

In announcing the changes, Mr. Hull stated that the "goal is to effect a degree of decentralization which will generally permit organization around product line groups." The Equipment Operations, under his direction, is one of five major operating segments of the company.

STROMBERG-CARLSON®

transmitter

Published by the famous makers of XY® Equipment

VOL. 4, NO. 8 NOVEMBER, 1955

New Hands-Free Telephone

When your subscriber wants both hands free to take notes, search his files . . . or to do other things while talking on the telephone, the new Stromberg-Carlson Hands-Free Telephone makes it possible.

With a single telephone he can have loudspeaking or confidential service. Or he may change from one to the other, without interrupting the call.

No Extra Boxes Just two components are used: a microphone, and a standard Stromberg-Carlson telephone with a sub-base containing the electronic loudspeaking components, the speaker, and the control buttons.

The microphone is small but highly sensitive at back and sides as well as the front. The user may wander 15 feet away in any direction and still be heard. Further, the mike may be moved freely, since it is on a 12-foot cord.

Both the telephone and the microphone are finished in attractive soft gray, to please the style-conscious subscriber.

Installation To install the Hands-Free Telephone, you handle it like any other telephone. Use it in either a dial or manual system, trunk-connected or as a station of a PBX system. The only extra step is to plug the power cord into a convenient AC outlet. This is to power the amplifier, and has nothing to do with functioning of the telephone in normal handset use. In a local power failure, the telephone is still usable.

Actual installation is a matter of minutes.

How It Works To make a confidential call, the user ignores the Hands-Free features, using the handset in the normal way.

For a loudspeaking call, he ignores the handset, using the red "ON" and the black "OFF" buttons in place of a hookswitch. A monitor lamp tells him the speaker and mike are operating. Dial tone and all voices are heard through the speaker. A volume control knob is used to adjust incoming voices to a comfortable level. Subscriber talks into microphone. Automatic Volume Control prevents his voice from "booming" — even if he is too close to the mike.

To change from handset to Hands-Free talking, the subscriber presses the "ON" button, replaces the receiver, then releases the button. This cuts speaker and microphone into use.

To change from Hands-Free to handset, he simply lifts the handset. This cuts out the mike and speaker.

A microphone cut-off is also provided. By holding it down, subscriber can prevent other parties from hearing what is said in the vicinity of the Hands-Free Telephone. Loudspeaker continues to operate.

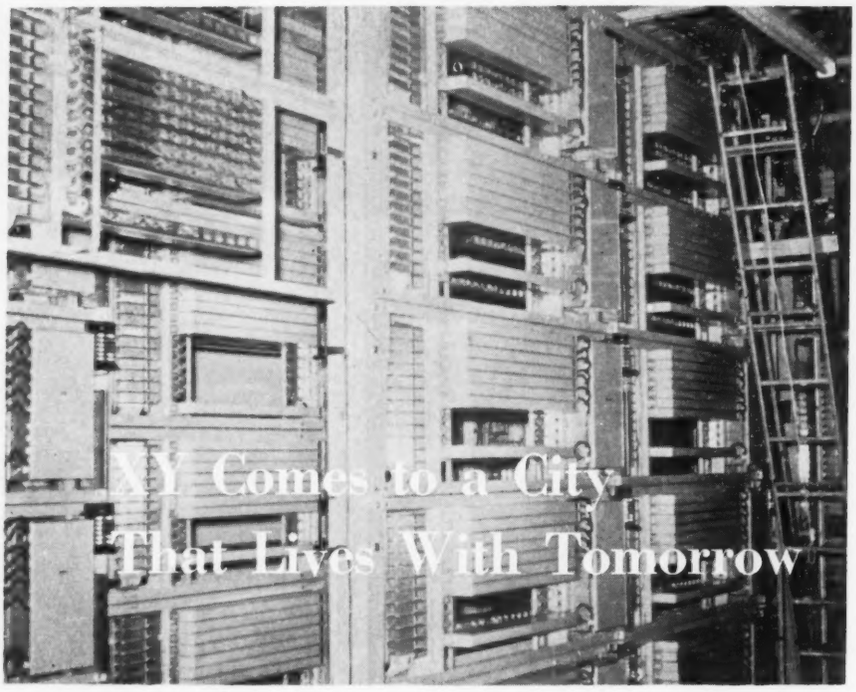
Sales Advantages As a revenue-builder, the Hands-Free Telephone has several important advantages. It encourages the subscriber to make more calls, since each call is less of an interruption in his work. Especially for toll calls, he knows he can consult his files while talking, saving valuable minutes.

And its main benefit — convenience of having both hands free — practically sells itself to busy commercial subscribers, such as contractors, newspapers, retail stores. Space-saving and attractive styling help the telephone company to clinch the sale.

Controls in base are (l. to r.) "ON" and "OFF" buttons, monitor lamp, microphone cut-off button, speaker, volume control.

"Tell him the Model K-66 has been replaced by the Model SK-66 . . . We can ship this afternoon via air freight."

STROMBERG-CARLSON transmitter



XY Comes to a City That Lives With Tomorrow

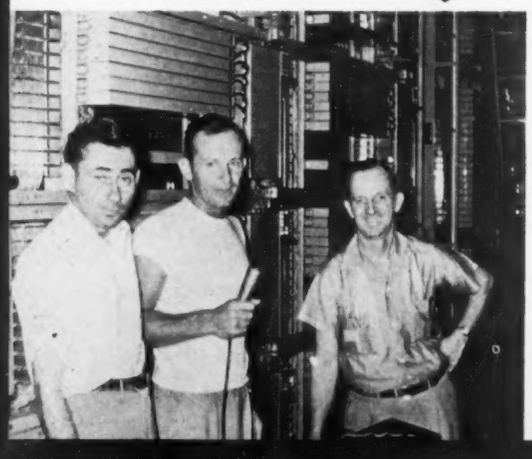
The majestic Columbia River surges eastward past Kennewick, Washington, gathering strength for the massive turnabout swing that will eventually take it to the Pacific Ocean.

Nearby, another tremendous power — the power of the atom — is being released in one of the world's leading atomic energy plants.

Influenced by both the Columbia River and the Hanford atomic energy plant, the city of Kennewick has blossomed with great activity and growth.

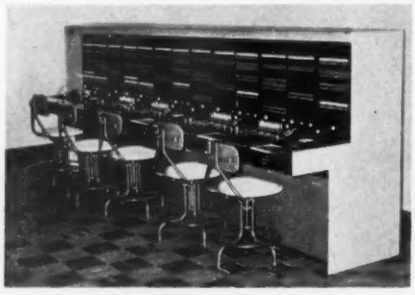
General Telephone Company of the Northwest took over the Kennewick exchange in 1948. It had 1400 subscribers. On August 20 of this year, it had 4800 — a 343% increase in seven years!

Stromberg-Carlson installers: (l. to r.) Eugene Sullivan, service engineer, Tommy Holmes, installation foreman, and assistant installation manager George Christiansen.



D-Day a Big Day

August 20 was the day General Telephone cut over its Kennewick exchange to XY® dial. It was a big day for the city, and radio station KWIE aired a special on-the-spot broadcast.



New Stromberg-Carlson toll switchboard handles long distance service for Kennewick exchange of General Telephone Company of the Northwest.

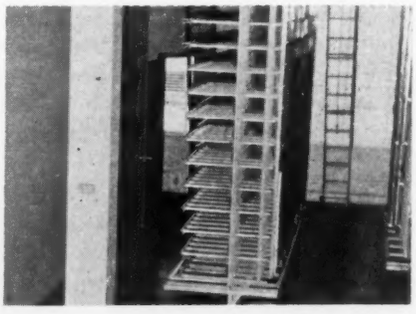
Washington's Public Service Commissioner Robert Youmans was among the important guests. So were most of the Directors of General Telephone Company of the Northwest, including president W. R. Jarmon. And of course, Arthur Anell, Kennewick division manager, was one of the proudest men at the celebration. Former Kennewick manager Walter S. Taylor, who is now southern division manager at Moscow, Idaho, returned to his old home for the occasion.

And at 11:01 p. m. the cutover came off, smooth as silk.

One of the requirements for the new dial equipment at Kennewick was a challenging one. The racks were to be *suspended from the ceiling*, instead of floor mounted. Because they had already successfully done this in a large XY System at Cazenovia, N. Y., Stromberg-Carlson engineers welcomed the challenge and produced a design to do the job.

Another reason General Telephone Company of the Northwest could feel confident in their selection of XY dial was the fact that another of their largest exchanges was cut over in 1953 and has delivered excellent service. This is Coeur d'Alene, Idaho, with 4200 terminals at time of cutover to XY.

Dial is one of several innovations General has brought to Kennewick. In line with its established policy of bringing the latest achievements to its public, the company did considerable outside plant reconstruction, and machine accounting methods.



An unusual feature of the Kennewick XY Dial System is that equipment hangs from beams. You can actually slide a sheet of paper between the foot of the racks and the floor! Stromberg-Carlson engineers gained experience in this type of installation, when it proved successful for the Cazenovia, N. Y. Telephone Company last spring.

Today, the people of Kennewick are enjoying telephone service as modern as the atomic era in which they live, from the moment the 'phone is installed right down to the instant the bill is dropped in their mailbox. And they'll continue to enjoy it — even as their rapid growth continues and they reach 7,000 stations in 1960, as President Jarmon has predicted.

STROMBERG-CARLSON transmitter

An Island Takes to XY Dial

Tucked up in the far northwest corner of the U. S. are the San Juan Islands. They are also San Juan County of the state of Washington.

Friday Harbor is the county seat, and its growing population concerns itself mostly with fishing, canning and the resort trade. It takes a fascinating and scenic boat or airplane ride to get to Friday Harbor, yet the Inter-Island Telephone Company has managed to link the islands and mainland with an excellent telephone network.

Lyman Phifer, manager of the Inter-Island Telephone Company.

On July 10, XY® dial was cut over in Friday Harbor by L. D. Phifer, owner and operator of the company. Later this year, plans call for cutting over East Sound exchange on the resort island of Orcas. When this is done, Inter-Island Telephone Company will be 100% XY dial.

The islands have spawned rapidly in the last few years, and Inter-Island's service has stepped lively to keep pace. In 1946, when Mrs. L. D. Phifer's father owned the exchange, there were 68 magneto lines in the Friday Harbor exchange and 28 lines at East Sound. Growth is dramatically indicated by the fact that the new XY System at Friday Harbor is 200 lines and the XY System under way for East Sound is 100 lines.

Clem Hutchinson, Stromberg-Carlson installer, checks new XY System as Manager Phifer looks on.

Wells, Nevada Goes XY

Austin Peltier (right) tests new XY equipment, along with installation supervisor Laurence Carey, who has had 27 years service in the Elko exchange.

When the new XY® Dial System was cut over at Wells, Nevada on September 14, it brought great changes, as it has to most growing towns.

For the 340 subscribers in the community it brought new modern service with an immediate capacity of 450 stations, and with ultimate capacity of 1,000. Along with dial came improved toll service, providing seven toll trunks to Elko instead of four. The citizens were justly proud of their new system and its owner, California-Pacific Utilities Company.

Unseen Switchboard

For Austin L. Peltier, it brought an end to a 26-year vigil at the switchboard. It is a switchboard he has never seen, because when Austin Peltier was a young cowhand he was kicked by an unruly horse and has been blind since.

In 1929, he was hired as agent and operator of the Wells exchange of the Elko County Telephone and Telegraph Co. (which has since been purchased by the California-Pacific Utilities Company). The switchboard was moved into his home, where he and his wife provided the town's first 24-hour telephone service. There were 75 subscribers then.

As the town grew, Austin Peltier's memory grew, too. He had to remember each number of each subscriber. On toll calls he had sets of numbers to remember — and often as many as four calls going, at one time.

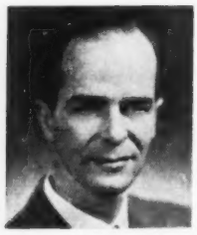
Nightly Vigil

More operators were taken on, but Austin Peltier continued to work the night shift, 10 p. m. to 6 a. m., himself.

With the advent of the XY Dial System, he now finds himself free of the switchboard. He remains as agent for the telephone company in Wells.

As public speaker, humorist, Chamber of Commerce leader (he has been its president), answer man on everything from the price of eggs to the best spots for fishing, devoted husband, father and grandfather, Austin Peltier well deserves the greater freedom brought to him by the new XY Dial System.

STROMBERG-CARLSON **transmitter**



The Postman's Holiday: No. 3

We wished we could have spent more time on the Blue Ridge Parkway, but the far-flung empire of the Intermountain Telephone Company begins just south and west of Roanoke. Our first objective was *Wytheville*, where a trim new XY® dial exchange has recently been placed in service.

"Pulling tooth picks" at conversion of Wytheville, Va. to XY dial.
Special service operators like the new Wytheville information desk.

Hungry Mother State Park, on a fine man-made lake in the mountains above Marion, Virginia, provided a welcomed change. Southern hospitality was immediately apparent as neighboring campers invited us over for pop-corn and offered to "take on" the children for a day of swimming and fishing while we made our calls in Bristol and Kingsport.

Manager Bocock and office girls welcomed us to Marion exchange.

Hands across the state line at Bristol. Fred, in Virginia, and Angeline, in Tennessee, stop traffic for a picture.

Mr. Kelley McNish, president of the Intermountain Telephone Company.

In a brief visit at the *Marion* exchange Mr. J. B. Bocock, local manager, and Mack Gillenwater, equipment man, showed us how XY dial equipment has been employed to expand existing facilities. Then on through storied *Abingdon*, known to many as the home of the Barter Theatre (where stage "ham" was traded for the more succulent variety) to *Bristol* — squarely astride the Virginia-Tennessee line and Intermountain headquarters.

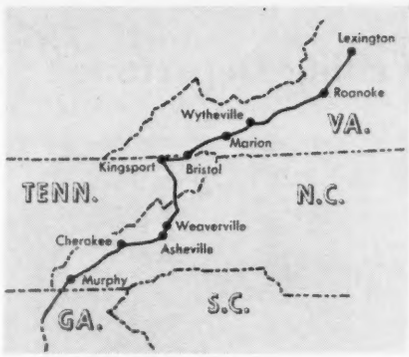
Mr. Kelley McNish, president, and A. E. (Dick) Reynolds extended a gracious welcome. One senses a dynamic surge here as this company attacks its program with the same drive which has transformed the entire economy of the service area embracing many counties in both states.

Show place of their system is still *Kingsport*, Tennessee, wonder city growing according to plan, although at a pace no one could have foreseen. Mr. John Wilson, local manager, has met the challenge of operating a 7,000 line exchange with the expert assistance of Mr. Ralph Musick, equipment supervisor, and Miss Stokes, chief operator.

Tennessee - Eastman Corporation and many other industrial giants have given a hostage to the future of

When you want to find the telephone company, ask the man who works there. Intermountain crew at Marion, Va.

Shown in Kingsport, Tennessee, office. Standing: John Wilson, local manager; John Voss, Stromberg-Carlson; John E. Sexton, vice-president Intermountain Telephone Co.; R. C. Lake, Stromberg-Carlson. Kneeling: W. L. Mollands and J. C. Hagen, Stromberg-Carlson; A. E. Reynolds, assistant vice-president, Intermountain Telephone Co.



Beautiful Blue Ridge country . . . and spectacular Smokies.

this tri-cities area; a challenge to the telephone company which it gladly accepts.

Leaving Elizabethton and Intermountain territory, we were engulfed by mountain vastnesses that roll back the years. Plain folk with backs bent to the steep hillsides — log cabins, half an acre of tobacco, a generous sprinkling of small churches. The pass into North Carolina afforded a breathtaking panorama of Mt. Mitchell and the range encircling Asheville.

Weaverville is operating headquarters for the Western Carolina Telephone Company, with broad coverage as shown in the accompanying diagram. Mr. Linn Garibaldi of Matthews is president of this company and the North Carolina Telephone Company, visited later.

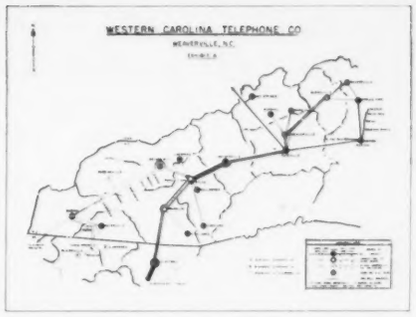
Mr. Thomas H. Sawyer, vice president for the eastern division, traced the growth of this remarkable company by expansion and amalgamation to its present stature. The region — richly endowed with natural beauty and a beneficent climate — had long been a popular resort when the Biltmore Industries were started as a project to educate and provide income for mountain people. From this small beginning has grown the burgeoning textile industry concentrated in and around Asheville, as northern companies moved quickly to take advantage of a new labor market closer to sources of raw material and power.

Tucked away in the Tennessee mountains . . . turning the calendar back on fabled Americana.

Thomas Sawyer (right), vice-president, and James Bell, treasurer, of the Western Carolina Telephone Co. at Weaverville, N. C.

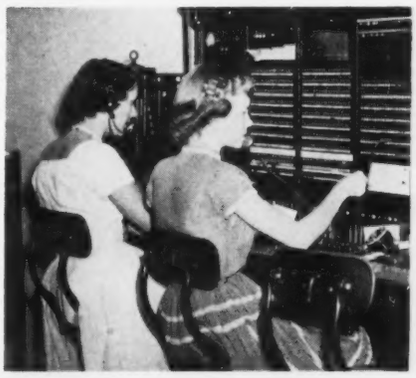
We know now how the Smokies got their name. Also what mile-high clouds look like from the top!

Don't miss it! If you're near Asheville in the summer, go see the Cherokee Indians present their pageant "Unto These Hills."



The network of exchanges comprised in the Western Carolina Co. serves a largely undeveloped area now experiencing a boom.

Much of this concentration has been in areas served by the Western Carolina Company — a situation which is not without problems. For instance, a by-product of the search for more power led to the building of Fontana Dam — highest east of the Rockies — and the subsequent need for a brand new telephone exchange serving the myriads of cottages now lining the shores of this man-made summer recreation area.



When XY comes to Murphy, N. C., operators can concentrate on giving excellent toll service.

Mr. R. E. McKelvey, vice president for the western division extended the courtesy of the Murphy exchange, soon to be converted to XY dial operation. Operators here handle toll calls for the unattended XY offices of the Standard Telphone Company of Georgia, as well as toll business originating locally.

Between calls, we made a never-to-be-forgotten visit to the Cherokee Indian Reservation in the heart of the Great Smokies, where a masterfully staged pageant, "Unto These Hills," makes a terrific impact.

STROMBERG-CARLSON transmitter

The Advertising, Literature and Technical Writing Department

Up to her neck in business: Carmie Agnello.

who we are . . . and what we do

Pencils, paste, prints, photographs, and perspiration are standard tools of the trade for the multi-function group known as the Telephone Advertising Department. The work falls into three principal categories: national magazine advertising, conventions, and promotional material, the chief concern of Mr. F. W. Haupt, advertising manager, and Ray Weis; sales brochures, descriptive literature, catalogs and magazine articles under the supervision of George Forbes; operational and maintenance manuals prepared by the technical writers under Jack Herman's direction.

"That ad we ran in May certainly brought results!" F. W. Haupt, advertising manager, points out the tabulation of inquiries to assistant manager R. P. Weis and Anita Betlem, secretary.

How would you caption this picture? Since many appear elsewhere, we'll eliminate those persons, leaving: Peggy Leighton, Lois Hardy, (Peggy Race, absent), Joanne Allen, Dick Crandall, Clayton Collins, Morris Herman, Francis Gioseffi, Robert Roselle.

Is it a sales brochure, descriptive literature, a magazine article, or a catalog section? Elmer Foote, George Forbes and Al Mosher pool ideas.

It's a stimulating and challenging job for, with the relatively small numbers, it is essential that each person be able to double in brass, strings or percussion as the occasion demands. Not least among the managerial responsibilities of Frederic Haupt, is the steering of personnel from one assignment to another, trying to keep ahead of deadlines which sometimes seem to be based on the 24-hour day!

The group has been doubled in size in the last year, and as of the present is embarked on a greatly accelerated program to provide more complete supporting literature for the expanding line of Stromberg-Carlson products servicing the Independent telephone industry.

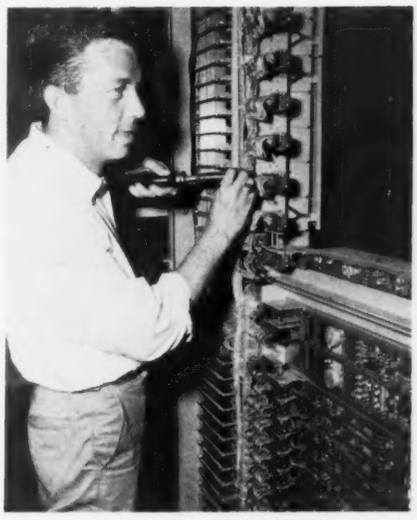
Specialists in "How-to-do-it," technical writers Bert Gould, Jack Herman, Bill Synal, Dick Tompkins are working on a new maintenance manual.

Pardon Us!

We know we shouldn't blow our own horn, but it's fun. In fact we're rather proud of our output as shown in the upper right. Have you asked your Stromberg-Carlson representative what's new in literature these days?

STROMBERG-CARLSON transmitter

Ada, Minnesota, Follows Trend to XY Dial Service



Kenneth P. Ellefson, general manager, Norman County Telephone Co., makes routine inspection of XY dial equipment at Ada, Minn.

The Norman County Telephone Company, Mr. L. J. Ollig, president, began a large-scale improvement program in their extensive service area about seven years ago. The management is particularly proud of the new XY® dial office serving over 700 subscribers in Ada, Minnesota, and the neighboring towns of Hedrum and Lockhart. Calls in Ada are averaging over 5,000 per day.

The past few years have shown a tremendous increase in requests for service at Ada and toll facilities had been taxed to the limit. The new system is designed to accommodate present requirements and provide a safe margin for the immediate future.

The fine building at Ada is the home office of the Norman County Telephone Co.

A Telephone Man's Man

Ralph H. Barger

No one can successfully win an argument with the calendar. Chronologically speaking, September 29 marked a change for Ralph H. ("Cy") Barger, growing out of the company retirement policy.

"Cy" Barger is known all over the country for his 44 years of devoted service to the Independent telephone industry. As switchboard engineer, sales engineer, commercial sales manager and manager of customer services, his wide experience and painstaking attention to details helped many a young manager over a rough spot.

At a testimonial dinner held on his birthday, tributes were paid by coworkers and visiting telephone company executives. A life membership in the Genesee Chapter of the Independent Telephone Pioneers was presented. But best of all was "Cy's" statement: "I'm still going to be working with you."

"Cy" and Mrs. Barger want to try out some new luggage before he returns as a part time consultant. All their friends will be wishing them Happy Vacation.

A proud moment, as Life Membership in Genesee Chapter of Telephone Pioneers is presented to "Cy" Barger by Wm. A. Kern, president of the Pioneer Chapter and executive vice-president of Rochester Telephone Corporation.

One Family sees 3 become 500

When the Coffey family founded the telephone company at Kalama, Washington, fifty-two years ago it wasn't hard to identify the subscribers — there were just three.

The fiftieth anniversary saw a 200-line XY® Dial System cut into service with Mrs. Eva Coffey England, widow of the founder, present to advise her son Darrel and grandson Ronald in the niceties of customer satisfaction.

That they have succeeded well is attested by growth since dial day, culminating in the installation of a Stromberg-Carlson all-gray telephone with an appropriate plaque indicating the 500th station in the Kalama exchange.

Darrel Coffey, (left), of the Kalama (Wash.) Telephone Company accepts congratulations from Frank Jaeger, local insurance agent, as son Ronald Coffey installs the company's 500th telephone.

STROMBERG-CARLSON transmitter

Meet Representatives of our Kansas City Branch

Frank J. Micka remembers a childhood walk with his grandfather, and how he was fascinated with the hum he would hear as he pressed his ears against a telephone pole.

"Those are talking wires," said the grandfather. "Maybe some day they'll talk to you."

The boy's curiosity turned into the man's vocation, for Frank has been in the telephone game almost all his life. In 1920 he started soldering jacks for Western Electric — had to be warned that if he kept up that speed he'd work himself out of a job. After three years in the factory he obtained outside work with the Long Lines installation force.

He doesn't tell us how he got from Chicago to Portland, Oregon, (but says it wasn't Pullman); next income came from a job as radio and telephone operator at Squaw Harbor, Alaska.

Several years and two depressions later, Frank and Dorothy Micka took a fill-in job running a furniture store in Texas; here he chanced to meet Stromberg-Carlson's chief installer and came back to his only real love. Rising through the ranks in the installation department, Frank was selected for sales work after World War II and traveled Ohio and West Virginia before he was assigned to his present territory in Arkansas, Oklahoma and southern Kansas.

Frank and Dorothy have two children, Patricia Louise (9) and Gary Francis (4). Frank says his hobbies are collecting various types of ore, fishing, mountain climbing and "evading work around home."

Robert B. Leary has five principal reasons for wanting to spend most week-ends at home: wife Virginia and the four boys — Michael (11), Steven (9), Thomas (5), and Robert (2). And because Bob is the gregarious type and thrives on activity he has "adopted" several more boys through his Boy Scout associations and as superintendent of the Sunday School at Holy Trinity Episcopal Church.

There are long drives between some of the customer stops in Wyoming, Colorado, Nebraska and northern Kansas; this offers Bob a chance to plan the "sales pitch" and perhaps even sneak in a few thoughts on how to beat the boys in baseball . . . . he does a good job at both.

It was Lieutenant (1st) Leary that flew fifty-four missions out of Italy for the Air Force, before coming home to Rochester and Stromberg-Carlson in 1942. Starting in the factory in the Wood Shop and Production Control, Bob learned this side of the business before transferring to the Sales Manager's office for intensive training in sales procedures and order editing. He also sandwiched in some courses in telephony at Rochester Institute of Technology.

Bob and Virginia love Lincoln, Nebraska, and their many friends in and out of the telephone business speak for the welcome they have received.

Roegner J. Cushing claimed travel as a hobby long before his appointment as traveler for the state of Missouri. During regular two-week vacations, Roeg and Trude Cushing have visited 42 of the 48 states, and have a special love for the Pacific Northwest. But a hitch in their plans has arisen — Missouri offers so many attractions that it's becoming harder each year to leave.

Roeg Cushing grew up in Rochester, N.Y., attending the University before he started in the factory at Stromberg-Carlson in 1941. During World War II he was a production engineer for important radio and telephone projects for the Armed Services, and helped in the early production stages of the XY® Dial System.

After the war he was transferred to the Credit Department and became associated with his side of the business first in the Chicago branch and later in Kansas City. Just before his appointment as Missouri sales representative in 1953, Roeg held the post of office manager at the Kansas City branch.

Trude Cushing is very active in civic affairs, including Red Cross, Polio Fund and the Women's Golf Club. Roeg has had to limit activities to the small amount of time a salesman has at home, but he is particularly proud of a new membership recently earned — in the Independent Telephone Pioneers.

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the BACK of the BOOK

By John G. Reynolds

Marathon Calling

THEATERS and telephones seem to form an irresistible combination. And sometimes the combination can make telephone people unhappy. That's what happened recently in Springfield, Ill.

To promote "*The Man From Laramie*" a local theater manager advertised that fans could "talk" to Jimmy Stewart, star of the picture. Readers who dialed the number heard a short recording of Stewart's voice telling the film's merits. So many eager fans made the call that the entire connector group was overloaded. After two days Bob Parker, Illinois Bell's Springfield manager, suggested the advertising be discontinued. The theater manager, more than pleased with the results, agreed to having the equipment removed. Everybody was happy—the theater was filled, the *Illinois State Journal* could boast of the pulling power of its ads, and the telephone equipment had a chance to relax.

Plaid Dialing

THE SUCCESS of school telephones at Georgia Tech —gold and white—has prompted telephone officials to consider approaching other colleges with the idea.

Sounds fine—at first. But we begin to get a little unsettled when we consider Clemson (orange and purple), Miami of Florida (orange, green, and white), or William and Mary (green, gold, and silver).

And we get downright uneasy when we think about Carnegie Tech. Their colors: tartan plaid.

First Aid

YOU MAY not regard the telephone as a prosthetic device, but there's an expediter at the U. S. Steel Co. who could give you an argument on the proposition.

The steelman, in the course of his day's job, makes close to 50 telephone calls each day. So when he broke his arm, which was promptly immobilized, it looked as though he were a good candidate for time off. But an Illinois Bell service engineer saved the situation by selling the company a "Speakerphone." Relieved from the chore of holding his telephone, the expediter expedited happily with no lost time. The steel company is considering additional "Speakerphones" and an improved absenteeism record.

"No Thank You!"

A NEW TWIST comes from Beckenham, England. Mrs. Evan Haines of Beckenham said there are 350,000 people on a waiting list for telephones, but the government (which operates the telephone system in England), is installing a telephone she doesn't want!

Mrs. Haines told this story:

She saw a man digging a hole outside her apartment house and asked him what he was doing.

"Nothing to worry about, lady," he said, "just laying on your new phone."

"But I don't want a telephone."

"I've got my orders, ma'am," said the workman.

During the next few days more workmen came. They bored a hole through a garden wall, dug up part of the lawn, laid a cable and strung a wire up the side of the apartment building.

A spokesman for the post office, which maintains Britain's state-owned telephone system, said:

"We know Mrs. Haines doesn't want a telephone, but in the future some other tenant of her flat may have different ideas!"

Man's Castle

A MICHIGAN housewife, we read recently, complained to police that her husband had built a strongbox around the telephone and padlocked it each morning before he went to work. Seemed he felt she took too much time away from household chores to chat with her friends. Police listened sympathetically, smiled, and said there wasn't a thing they could do about it.

Mister Chief Operator

A RECENT retirement signified the final curtain on the male chief operator era of Bell System history. On the last day in August the retirement program of Southern Bell had placed the last call for Bell's remaining male chief operator in the United States and Canada. J. Everett Hagan of New Haven, Ky. had joined the rolls of the leisure.

Mr. Telephone, as Everett Hagan is called in New Haven, has cleared calls through central for some 300 subscribers going on four decades. He has become an institution in his own right. Little goes on in New Haven that Mr. Hagan has not had a part in.

Hagan is a native of the town and entered telephone work more than 39 years ago as a "grunt," pole-hole digger, for the Cumberland Telephone Co. When Southern Bell and Cumberland became one he worked switchboard by night and did trouble shooting by day for 10 years, he changed to inside work in 1929. He was appointed chief operator in 1932 and remained in this position until the time of his retirement.

According to *Southern Telephone News* Mr. Hagan has many rich memories about his job. Nothing, not even fire or burglary, has driven him from the switchboard. He has been a clearing house for details on emergencies, time of day, the state of health of ailing local people, and all general information.

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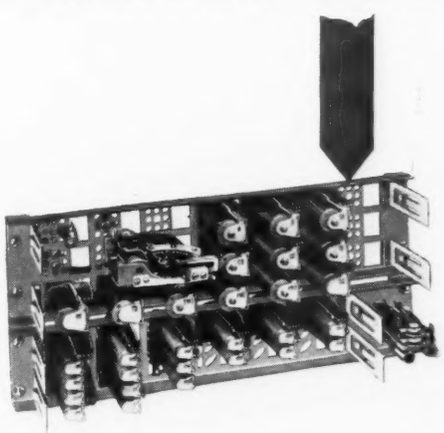

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